

ผนวก ก

ตารางสถิติ

ตารางต่อไปนี้แสดงค่าที่จำเป็นในการคำนวณและค่าวิกฤติในการตัดสินใจของการทดสอบภาวะสารูปสนิทิตสำหรับการแจกแจงแบบปกติ ได้แก่

- ตาราง ก1 แสดง Upper tail percentage points of Anderson-Darling test
- ตาราง ก2 แสดงสัมประสิทธิ์ (a_{n+1}) ของตัวสถิติทดสอบ Shapiro-Wilk test (W)
- ตาราง ก3 แสดง Percentage points of Shapiro-Wilk test (W)
- ตาราง ก4 แสดงค่าคาดหวังของสถิติอันดับจากการแจกแจงแบบปกติมาตรฐาน (Expected value of normal order statistics)
- ตาราง ก5 แสดง Percentage points of Shapiro-Francia test (W')
- ตาราง ก6 แสดง Percentage points of Z_A for testing normality
- ตาราง ก7 แสดง Percentage points of Z_C for testing normality
- ตาราง ก8 แสดง Percentage points of Z_K for testing normality

ตาราง ก1

แสดง Upper tail percentage points of Anderson-Darling test

| กรณี | ตัวสถิติทดสอบ | Upper tail probability | | | |
|--|--|------------------------|-------|-------|-------|
| | | 0.10 | 0.05 | 0.025 | 0.01 |
| ทราบดีค่าพารามิเตอร์ | A^2 | 1.933 | 2.492 | 3.070 | 3.857 |
| ทดสอบการแจกแจงแบบปกติ, ประมาณค่าเฉลี่ย ($n > 20$) | A^2 | 0.894 | 1.087 | 1.285 | 1.551 |
| ทดสอบการแจกแจงแบบปกติ, ประมาณความแปรปรวน ($n > 20$) | A^2 | 1.743 | 2.308 | 2.898 | 3.702 |
| ทดสอบการแจกแจงแบบปกติ, ประมาณค่าเฉลี่ยและความแปรปรวน | $A^2 \left(1 + \frac{3}{4n} + \frac{9}{4n^2} \right)$ | 0.631 | 0.752 | 0.873 | 1.035 |

ที่มา : Graham Upton and Ian Cook, A Dictionary of Statistics. 2004, p. 6-7.

ตาราง ก2

แสดงสัมประสิทธิ์ (a_{n-i+1}) ของตัวสถิติทดสอบ Shapiro-Wilk test(W)

| n | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.7071 | 0.7071 | 0.6872 | 0.6646 | 0.6431 | 0.6233 | 0.6052 | 0.5888 | 0.5739 |
| 2 | - | 0.0000 | 0.1677 | 0.2413 | 0.2806 | 0.3031 | 0.3164 | 0.3244 | 0.3291 |
| 3 | - | - | - | 0.0000 | 0.0875 | 0.1401 | 0.1743 | 0.1976 | 0.2141 |
| 4 | - | - | - | - | - | 0.0000 | 0.0561 | 0.0947 | 0.1224 |
| 5 | - | - | - | - | - | - | - | 0.0000 | 0.0399 |

| n | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.5601 | 0.5475 | 0.5359 | 0.5251 | 0.5150 | 0.5056 | 0.4968 | 0.4886 | 0.4808 | 0.4734 |
| 2 | 0.3315 | 0.3325 | 0.3325 | 0.3318 | 0.3306 | 0.3290 | 0.3273 | 0.3253 | 0.3232 | 0.3211 |
| 3 | 0.2260 | 0.2347 | 0.2412 | 0.2460 | 0.2495 | 0.2521 | 0.2540 | 0.2553 | 0.2561 | 0.2565 |
| 4 | 0.1429 | 0.1586 | 0.1707 | 0.1802 | 0.1878 | 0.1939 | 0.1988 | 0.2027 | 0.2059 | 0.2085 |
| 5 | 0.0695 | 0.0922 | 0.1099 | 0.1240 | 0.1353 | 0.1447 | 0.1524 | 0.1587 | 0.1641 | 0.1686 |
| 6 | 0.0000 | 0.0303 | 0.0539 | 0.0727 | 0.0880 | 0.1005 | 0.1109 | 0.1197 | 0.1271 | 0.1334 |
| 7 | - | - | 0.0000 | 0.0240 | 0.0433 | 0.0593 | 0.0725 | 0.0837 | 0.0932 | 0.1013 |
| 8 | - | - | - | - | 0.0000 | 0.0196 | 0.0359 | 0.0496 | 0.0612 | 0.0711 |
| 9 | - | - | - | - | - | - | 0.0000 | 0.0163 | 0.0303 | 0.0422 |
| 10 | - | - | - | - | - | - | - | - | 0.0000 | 0.0140 |

| n | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.4643 | 0.4590 | 0.4542 | 0.4493 | 0.4450 | 0.4407 | 0.4366 | 0.4328 | 0.4291 | 0.4254 |
| 2 | 0.3185 | 0.3156 | 0.3126 | 0.3098 | 0.3069 | 0.3043 | 0.3018 | 0.2992 | 0.2968 | 0.2944 |
| 3 | 0.2578 | 0.2571 | 0.2563 | 0.2554 | 0.2543 | 0.2533 | 0.2522 | 0.2510 | 0.2499 | 0.2487 |
| 4 | 0.2119 | 0.2131 | 0.2139 | 0.2145 | 0.2148 | 0.2151 | 0.2152 | 0.2151 | 0.2150 | 0.2148 |
| 5 | 0.1736 | 0.1764 | 0.1787 | 0.1807 | 0.1822 | 0.1836 | 0.1848 | 0.1857 | 0.1864 | 0.1870 |
| 6 | 0.1399 | 0.1443 | 0.1480 | 0.1512 | 0.1539 | 0.1563 | 0.1584 | 0.1601 | 0.1616 | 0.1630 |
| 7 | 0.1092 | 0.1150 | 0.1201 | 0.1245 | 0.1283 | 0.1316 | 0.1346 | 0.1372 | 0.1395 | 0.1415 |
| 8 | 0.0804 | 0.0878 | 0.0941 | 0.0997 | 0.1046 | 0.1089 | 0.1128 | 0.1162 | 0.1192 | 0.1219 |
| 9 | 0.0530 | 0.0618 | 0.0696 | 0.0764 | 0.0823 | 0.0876 | 0.0923 | 0.0965 | 0.1002 | 0.1036 |
| 10 | 0.0263 | 0.0368 | 0.0459 | 0.0539 | 0.0610 | 0.0672 | 0.0728 | 0.0778 | 0.0822 | 0.0862 |
| 11 | 0.0000 | 0.0122 | 0.0228 | 0.0321 | 0.0403 | 0.0476 | 0.0540 | 0.0598 | 0.0650 | 0.0697 |
| 12 | - | - | 0.0000 | 0.0107 | 0.0200 | 0.0284 | 0.0358 | 0.0424 | 0.0483 | 0.0537 |
| 13 | - | - | - | - | 0.0000 | 0.0094 | 0.0178 | 0.0253 | 0.0320 | 0.0381 |
| 14 | - | - | - | - | - | - | 0.0000 | 0.0084 | 0.0159 | 0.0227 |
| 15 | - | - | - | - | - | - | - | - | 0.0000 | 0.0076 |

ตาราง ก2 (ต่อ)

แสดงสัมประสิทธิ์ (a_{n+1}) ของตัวสถิติทดสอบ Shapiro-Wilk test (W)

| n i | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.4220 | 0.4188 | 0.4156 | 0.4127 | 0.4096 | 0.4068 | 0.4040 | 0.4015 | 0.3989 | 0.3964 |
| 2 | 0.2921 | 0.2898 | 0.2876 | 0.2854 | 0.2834 | 0.2813 | 0.2794 | 0.2774 | 0.2755 | 0.2737 |
| 3 | 0.2475 | 0.2463 | 0.2451 | 0.2439 | 0.2427 | 0.2415 | 0.2403 | 0.2391 | 0.2380 | 0.2368 |
| 4 | 0.2145 | 0.2141 | 0.2137 | 0.2132 | 0.2127 | 0.2121 | 0.2116 | 0.2110 | 0.2104 | 0.2098 |
| 5 | 0.1874 | 0.1878 | 0.1880 | 0.1882 | 0.1883 | 0.1883 | 0.1883 | 0.1881 | 0.1880 | 0.1878 |
| 6 | 0.1641 | 0.1651 | 0.1660 | 0.1667 | 0.1673 | 0.1678 | 0.1683 | 0.1686 | 0.1689 | 0.1691 |
| 7 | 0.1433 | 0.1449 | 0.1463 | 0.1475 | 0.1487 | 0.1496 | 0.1505 | 0.1513 | 0.1520 | 0.1526 |
| 8 | 0.1243 | 0.1265 | 0.1284 | 0.1301 | 0.1317 | 0.1331 | 0.1344 | 0.1356 | 0.1366 | 0.1376 |
| 9 | 0.1066 | 0.1093 | 0.1118 | 0.1140 | 0.1160 | 0.1179 | 0.1196 | 0.1211 | 0.1225 | 0.1237 |
| 10 | 0.0899 | 0.0931 | 0.0961 | 0.0988 | 0.1013 | 0.1036 | 0.1056 | 0.1075 | 0.1092 | 0.1108 |
| 11 | 0.0739 | 0.0777 | 0.0812 | 0.0844 | 0.0873 | 0.0900 | 0.0924 | 0.0947 | 0.0967 | 0.0986 |
| 12 | 0.0985 | 0.0629 | 0.0669 | 0.0706 | 0.0739 | 0.0770 | 0.0798 | 0.0824 | 0.0848 | 0.0870 |
| 13 | 0.0435 | 0.0485 | 0.0530 | 0.0572 | 0.0610 | 0.0645 | 0.0677 | 0.0706 | 0.0733 | 0.0759 |
| 14 | 0.0289 | 0.0344 | 0.0395 | 0.0441 | 0.0484 | 0.0523 | 0.0559 | 0.0592 | 0.0622 | 0.0651 |
| 15 | 0.0144 | 0.0206 | 0.0262 | 0.0314 | 0.0361 | 0.0404 | 0.0444 | 0.0481 | 0.0515 | 0.0546 |
| 16 | 0.0000 | 0.0068 | 0.0131 | 0.0187 | 0.0239 | 0.0287 | 0.0331 | 0.0372 | 0.0409 | 0.0444 |
| 17 | - | - | 0.0000 | 0.0062 | 0.0119 | 0.0172 | 0.0220 | 0.0264 | 0.0305 | 0.0343 |
| 18 | - | - | - | - | 0.0000 | 0.0057 | 0.0110 | 0.0158 | 0.0203 | 0.0244 |
| 19 | - | - | - | - | - | - | 0.0000 | 0.0053 | 0.0101 | 0.0146 |
| 20 | - | - | - | - | - | - | - | - | 0.0000 | 0.0046 |

ตาราง ก2 (ต่อ)

แสดงสัมประสิทธิ์ ($a_{n,i}$) ของตัวสถิติทดสอบ Shapiro-Wilk test (W)

| i | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 | 0.3940 | 0.3917 | 0.3894 | 0.3872 | 0.3850 | 0.3830 | 0.3808 | 0.3789 | 0.3770 | 0.3751 |
| 2 | 0.2719 | 0.2701 | 0.2684 | 0.2667 | 0.2651 | 0.2635 | 0.2620 | 0.2604 | 0.2589 | 0.2574 |
| 3 | 0.2357 | 0.2345 | 0.2334 | 0.2323 | 0.2313 | 0.2302 | 0.2291 | 0.2281 | 0.2271 | 0.2260 |
| 4 | 0.2091 | 0.2085 | 0.2078 | 0.2072 | 0.2065 | 0.2058 | 0.2052 | 0.2045 | 0.2038 | 0.2032 |
| 5 | 0.1876 | 0.1478 | 0.1871 | 0.1868 | 0.1865 | 0.1862 | 0.1859 | 0.1855 | 0.1851 | 0.1847 |
| 6 | 0.1693 | 0.1694 | 0.1695 | 0.1695 | 0.1695 | 0.1695 | 0.1695 | 0.1693 | 0.1692 | 0.1691 |
| 7 | 0.1531 | 0.1535 | 0.1539 | 0.1542 | 0.1545 | 0.1548 | 0.1550 | 0.1551 | 0.1553 | 0.1554 |
| 8 | 0.1384 | 0.1392 | 0.1398 | 0.1405 | 0.1410 | 0.1415 | 0.1420 | 0.1423 | 0.1427 | 0.1430 |
| 9 | 0.1249 | 0.1259 | 0.1269 | 0.1278 | 0.1286 | 0.1293 | 0.1300 | 0.1306 | 0.1312 | 0.1317 |
| 10 | 0.1123 | 0.1136 | 0.1149 | 0.1170 | 0.1180 | 0.1170 | 0.1189 | 0.1197 | 0.1205 | 0.1212 |
| 11 | 0.1004 | 0.1020 | 0.1035 | 0.1049 | 0.1062 | 0.1073 | 0.1085 | 0.1095 | 0.1105 | 0.1113 |
| 12 | 0.0891 | 0.0909 | 0.0927 | 0.0943 | 0.0959 | 0.0972 | 0.0986 | 0.0998 | 0.1010 | 0.1020 |
| 13 | 0.0782 | 0.0804 | 0.0824 | 0.0842 | 0.0860 | 0.0876 | 0.0892 | 0.0906 | 0.0919 | 0.0932 |
| 14 | 0.0677 | 0.0901 | 0.0724 | 0.0745 | 0.0765 | 0.1783 | 0.0801 | 0.0817 | 0.0832 | 0.0846 |
| 15 | 0.0575 | 0.0602 | 0.0628 | 0.0651 | 0.0673 | 0.0694 | 0.0713 | 0.0731 | 0.0748 | 0.0764 |
| 16 | 0.0476 | 0.0506 | 0.0534 | 0.0506 | 0.0584 | 0.0607 | 0.0628 | 0.0648 | 0.0667 | 0.0685 |
| 17 | 0.0379 | 0.0411 | 0.0442 | 0.0471 | 0.0497 | 0.0522 | 0.0546 | 0.0568 | 0.0588 | 0.0608 |
| 18 | 0.0283 | 0.0318 | 0.0352 | 0.0383 | 0.0412 | 0.0439 | 0.0465 | 0.0489 | 0.0511 | 0.0532 |
| 19 | 0.0188 | 0.0227 | 0.0263 | 0.0296 | 0.0328 | 0.0357 | 0.0385 | 0.0411 | 0.0436 | 0.0459 |
| 20 | 0.0094 | 0.0136 | 0.0175 | 0.0211 | 0.0245 | 0.0277 | 0.0307 | 0.0335 | 0.0361 | 0.0380 |
| 21 | 0.0000 | 0.0045 | 0.0087 | 0.0126 | 0.0163 | 0.0197 | 0.0229 | 0.0259 | 0.0288 | 0.0313 |
| 22 | - | - | 0.0000 | 0.0042 | 0.0081 | 0.0118 | 0.0153 | 0.0185 | 0.0215 | 0.0244 |
| 23 | - | - | - | - | 0.0000 | 0.0039 | 0.0076 | 0.0111 | 0.0143 | 0.0174 |
| 24 | - | - | - | - | - | - | 0.0000 | 0.0037 | 0.0071 | 0.0104 |
| 25 | - | - | - | - | - | - | - | - | 0.0000 | 0.0035 |

ที่มา : Shapiro S. S. and Wilk M. B. Biometrika. 1965, v.52, p.591-611.

ตาราง ก3

แสดง Percentage points of Shapiro-Wilk test (W)

| α n | 0.01 | 0.02 | 0.05 | 0.10 | 0.50 | 0.90 | 0.95 | 0.98 | 0.99 |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 3 | 0.753 | 0.756 | 0.767 | 0.789 | 0.959 | 0.998 | 0.999 | 1.000 | 1.000 |
| 4 | 0.687 | 0.707 | 0.748 | 0.792 | 0.935 | 0.987 | 0.992 | 0.996 | 0.997 |
| 5 | 0.686 | 0.715 | 0.762 | 0.806 | 0.927 | 0.979 | 0.986 | 0.991 | 0.993 |
| 6 | 0.713 | 0.743 | 0.788 | 0.826 | 0.927 | 0.974 | 0.981 | 0.986 | 0.989 |
| 7 | 0.730 | 0.760 | 0.803 | 0.838 | 0.928 | 0.972 | 0.979 | 0.985 | 0.988 |
| 8 | 0.749 | 0.778 | 0.813 | 0.851 | 0.932 | 0.972 | 0.978 | 0.984 | 0.987 |
| 9 | 0.764 | 0.791 | 0.829 | 0.859 | 0.935 | 0.972 | 0.978 | 0.984 | 0.986 |
| 10 | 0.781 | 0.806 | 0.842 | 0.869 | 0.938 | 0.972 | 0.978 | 0.983 | 0.986 |
| 11 | 0.792 | 0.817 | 0.850 | 0.876 | 0.940 | 0.973 | 0.979 | 0.984 | 0.986 |
| 12 | 0.805 | 0.828 | 0.859 | 0.883 | 0.943 | 0.973 | 0.979 | 0.984 | 0.986 |
| 13 | 0.814 | 0.837 | 0.866 | 0.889 | 0.945 | 0.974 | 0.979 | 0.984 | 0.986 |
| 14 | 0.825 | 0.846 | 0.874 | 0.895 | 0.947 | 0.975 | 0.980 | 0.984 | 0.986 |
| 15 | 0.835 | 0.855 | 0.881 | 0.901 | 0.950 | 0.975 | 0.980 | 0.984 | 0.987 |
| 16 | 0.844 | 0.863 | 0.887 | 0.906 | 0.952 | 0.976 | 0.981 | 0.985 | 0.987 |
| 17 | 0.851 | 0.869 | 0.892 | 0.910 | 0.954 | 0.977 | 0.981 | 0.985 | 0.987 |
| 18 | 0.858 | 0.874 | 0.897 | 0.914 | 0.956 | 0.978 | 0.982 | 0.986 | 0.988 |
| 19 | 0.863 | 0.879 | 0.901 | 0.917 | 0.957 | 0.978 | 0.982 | 0.986 | 0.988 |
| 20 | 0.868 | 0.884 | 0.905 | 0.920 | 0.959 | 0.979 | 0.983 | 0.986 | 0.988 |
| 21 | 0.873 | 0.888 | 0.908 | 0.923 | 0.960 | 0.980 | 0.983 | 0.987 | 0.989 |
| 22 | 0.878 | 0.892 | 0.911 | 0.926 | 0.961 | 0.980 | 0.984 | 0.987 | 0.989 |
| 23 | 0.881 | 0.895 | 0.914 | 0.928 | 0.962 | 0.981 | 0.984 | 0.987 | 0.989 |
| 24 | 0.884 | 0.898 | 0.916 | 0.930 | 0.963 | 0.981 | 0.984 | 0.987 | 0.989 |
| 25 | 0.888 | 0.901 | 0.918 | 0.931 | 0.964 | 0.981 | 0.985 | 0.988 | 0.989 |
| 26 | 0.891 | 0.904 | 0.920 | 0.933 | 0.965 | 0.982 | 0.985 | 0.988 | 0.989 |
| 27 | 0.894 | 0.906 | 0.923 | 0.935 | 0.965 | 0.982 | 0.985 | 0.988 | 0.990 |
| 28 | 0.896 | 0.908 | 0.924 | 0.936 | 0.966 | 0.982 | 0.985 | 0.988 | 0.990 |
| 29 | 0.898 | 0.910 | 0.926 | 0.937 | 0.966 | 0.982 | 0.985 | 0.988 | 0.990 |
| 30 | 0.900 | 0.912 | 0.927 | 0.939 | 0.967 | 0.983 | 0.985 | 0.988 | 0.990 |
| 31 | 0.902 | 0.914 | 0.929 | 0.940 | 0.967 | 0.983 | 0.986 | 0.988 | 0.990 |
| 32 | 0.904 | 0.915 | 0.930 | 0.941 | 0.968 | 0.983 | 0.986 | 0.988 | 0.990 |
| 33 | 0.906 | 0.917 | 0.931 | 0.942 | 0.968 | 0.983 | 0.986 | 0.989 | 0.990 |
| 34 | 0.908 | 0.919 | 0.933 | 0.943 | 0.969 | 0.983 | 0.986 | 0.989 | 0.990 |
| 35 | 0.910 | 0.920 | 0.934 | 0.944 | 0.969 | 0.984 | 0.986 | 0.989 | 0.990 |
| 36 | 0.912 | 0.922 | 0.935 | 0.945 | 0.970 | 0.984 | 0.986 | 0.989 | 0.990 |
| 37 | 0.914 | 0.924 | 0.936 | 0.946 | 0.970 | 0.984 | 0.987 | 0.989 | 0.990 |
| 38 | 0.916 | 0.925 | 0.938 | 0.947 | 0.971 | 0.984 | 0.987 | 0.989 | 0.990 |
| 39 | 0.917 | 0.927 | 0.939 | 0.948 | 0.971 | 0.984 | 0.987 | 0.989 | 0.991 |
| 40 | 0.919 | 0.928 | 0.940 | 0.949 | 0.972 | 0.985 | 0.987 | 0.989 | 0.991 |
| 41 | 0.920 | 0.929 | 0.941 | 0.950 | 0.972 | 0.985 | 0.987 | 0.989 | 0.991 |
| 42 | 0.922 | 0.930 | 0.942 | 0.951 | 0.972 | 0.985 | 0.987 | 0.989 | 0.991 |
| 43 | 0.923 | 0.932 | 0.943 | 0.951 | 0.973 | 0.985 | 0.987 | 0.990 | 0.911 |
| 44 | 0.924 | 0.933 | 0.944 | 0.952 | 0.973 | 0.985 | 0.987 | 0.990 | 0.991 |
| 45 | 0.926 | 0.934 | 0.945 | 0.953 | 0.973 | 0.985 | 0.988 | 0.990 | 0.991 |
| 46 | 0.927 | 0.935 | 0.945 | 0.953 | 0.974 | 0.985 | 0.988 | 0.990 | 0.991 |
| 47 | 0.928 | 0.936 | 0.946 | 0.954 | 0.974 | 0.985 | 0.988 | 0.990 | 0.991 |
| 48 | 0.929 | 0.937 | 0.947 | 0.954 | 0.974 | 0.985 | 0.988 | 0.990 | 0.991 |
| 49 | 0.929 | 0.937 | 0.947 | 0.955 | 0.974 | 0.985 | 0.988 | 0.990 | 0.991 |
| 50 | 0.930 | 0.938 | 0.947 | 0.955 | 0.974 | 0.985 | 0.988 | 0.990 | 0.991 |

ที่มา : Shapiro S. S. and Wilk M. B. Biometrika. 1965, v.52, p.591-611.

ตาราง ก4 (ต่อ)

แสดงค่าคาดหวังของสถิติอันดับจากการแจกแจงแบบปกติมาตรฐาน

| n k | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | 2.50759 | 2.58634 | 2.64925 | 2.70148 | 2.74604 | 2.78485 | 2.81918 | 2.87777 | 2.92651 | 2.96818 |
| 2 | 2.14814 | 2.23630 | 2.30638 | 2.36434 | 2.41365 | 2.45649 | 2.49431 | 2.55867 | 2.61207 | 2.65761 |
| 3 | 1.94635 | 2.04090 | 2.11578 | 2.17755 | 2.22999 | 2.27547 | 1.31555 | 2.38365 | 2.44004 | 2.48806 |
| 4 | 1.80176 | 1.90146 | 1.98019 | 2.04500 | 2.09991 | 2.14746 | 2.18932 | 2.26033 | 2.31904 | 2.36897 |
| 5 | 1.68718 | 1.79137 | 1.87341 | 1.94081 | 1.99783 | 2.04713 | 2.09050 | 2.16397 | 2.22462 | 2.27615 |
| 6 | 1.59123 | 1.69947 | 1.78448 | 1.85419 | 1.91308 | 1.96395 | 2.00864 | 2.08427 | 2.14663 | 2.19955 |
| 7 | 1.50803 | 1.62002 | 1.70777 | 1.77959 | 1.84019 | 1.89247 | 1.93837 | 2.01595 | 2.07985 | 2.13402 |
| 8 | 1.43414 | 1.54966 | 1.63997 | 1.71376 | 1.77594 | 1.82953 | 1.87654 | 1.95592 | 2.02122 | 2.07654 |
| 9 | 1.36734 | 1.48623 | 1.57896 | 1.65462 | 1.71828 | 1.77310 | 1.82115 | 1.90220 | 1.96882 | 2.02521 |
| 10 | 1.30615 | 1.42828 | 1.52333 | 1.60075 | 1.66583 | 1.72182 | 1.77084 | 1.85348 | 1.92133 | 1.97871 |
| 11 | 1.24950 | 1.37477 | 1.47206 | 1.55118 | 1.61760 | 1.67470 | 1.72466 | 1.80879 | 1.87781 | 1.93614 |
| 12 | 1.19661 | 1.32493 | 1.42438 | 1.50514 | 1.57287 | 1.63103 | 1.68189 | 1.76746 | 1.83758 | 1.89681 |
| 13 | 1.14687 | 1.27819 | 1.37975 | 1.46210 | 1.53109 | 1.59027 | 1.64199 | 1.72894 | 1.80013 | 1.86021 |
| 14 | 1.09982 | 1.23409 | 1.33771 | 1.42161 | 1.49182 | 1.55200 | 1.60455 | 1.69283 | 1.76504 | 1.82595 |
| 15 | 1.05509 | 1.19226 | 1.29791 | 1.38333 | 1.45472 | 1.51588 | 1.56923 | 1.65880 | 1.73201 | 1.79371 |
| 16 | 1.01238 | 1.15243 | 1.26007 | 1.34697 | 1.41953 | 1.48163 | 1.53577 | 1.62659 | 1.70076 | 1.76324 |
| 17 | 0.97145 | 1.11435 | 1.22396 | 1.31232 | 1.38602 | 1.44904 | 1.50395 | 1.59599 | 1.67109 | 1.73432 |
| 18 | 0.93208 | 1.07783 | 1.18937 | 1.27917 | 1.35399 | 1.41792 | 1.47359 | 1.56681 | 1.64283 | 1.70678 |
| 19 | 0.89411 | 1.04268 | 1.15616 | 1.24738 | 1.32330 | 1.38812 | 1.44452 | 1.53891 | 1.61582 | 1.68048 |
| 20 | 0.85739 | 1.00879 | 1.12417 | 1.21680 | 1.29381 | 1.35950 | 1.41663 | 1.51216 | 1.58994 | 1.65530 |
| 21 | 0.82179 | 0.97601 | 1.09330 | 1.18731 | 1.26540 | 1.33195 | 1.38980 | 1.48645 | 1.56508 | 1.63112 |
| 22 | 0.78720 | 0.94426 | 1.06344 | 1.15883 | 1.23798 | 1.30539 | 1.36393 | 1.46169 | 1.54116 | 1.60786 |
| 23 | 0.75353 | 0.91342 | 1.03449 | 1.13126 | 1.21146 | 1.27971 | 1.33895 | 1.43780 | 1.51809 | 1.58544 |
| 24 | 0.72070 | 0.88344 | 1.00639 | 1.10452 | 1.18577 | 1.25485 | 1.31478 | 1.41470 | 1.49580 | 1.56379 |
| 25 | 0.68863 | 0.85423 | 0.97907 | 1.07855 | 1.16084 | 1.23074 | 1.29135 | 1.39233 | 1.47423 | 1.54285 |
| 26 | 0.65725 | 0.82573 | 0.95245 | 1.05329 | 1.13661 | 1.20733 | 1.26861 | 1.37063 | 1.45332 | 1.52257 |
| 27 | 0.62651 | 0.79789 | 0.92650 | 1.02868 | 1.11303 | 1.18457 | 1.24651 | 1.34957 | 1.43303 | 1.50289 |
| 28 | 0.59635 | 0.77065 | 0.90115 | 1.00469 | 1.09005 | 1.16240 | 1.22500 | 1.32908 | 1.41332 | 1.48378 |
| 29 | 0.56672 | 0.74398 | 0.87638 | 0.98125 | 1.06763 | 1.14079 | 1.20405 | 1.30914 | 1.39414 | 1.46520 |
| 30 | 0.53758 | 0.71782 | 0.85212 | 0.95835 | 1.04574 | 1.11970 | 1.18361 | 1.28971 | 1.37546 | 1.44711 |
| 31 | 0.50890 | 0.69215 | 0.82836 | 0.93594 | 1.02434 | 1.09909 | 1.16365 | 1.27076 | 1.35725 | 1.42948 |
| 32 | 0.48062 | 0.66692 | 0.80506 | 0.91399 | 1.00340 | 1.07895 | 1.14415 | 1.25225 | 1.33947 | 1.41228 |
| 33 | 0.45273 | 0.64212 | 0.78219 | 0.89247 | 0.98290 | 1.05923 | 1.12507 | 1.23415 | 1.32211 | 1.39550 |
| 34 | 0.42518 | 0.61770 | 0.75973 | 0.87135 | 0.96279 | 1.03992 | 1.10640 | 1.21646 | 1.30515 | 1.37910 |
| 35 | 0.39796 | 0.59365 | 0.73764 | 0.85062 | 0.94307 | 1.02098 | 1.08810 | 1.19914 | 1.28854 | 1.36306 |
| 36 | 0.37102 | 0.56993 | 0.71590 | 0.83025 | 0.92371 | 1.00241 | 1.07016 | 1.18217 | 1.27229 | 1.34736 |
| 37 | 0.34436 | 0.54653 | 0.69450 | 0.81022 | 0.90469 | 0.98418 | 1.05256 | 1.16553 | 1.25637 | 1.33199 |
| 38 | 0.31793 | 0.52343 | 0.67341 | 0.79051 | 0.88599 | 0.96626 | 1.03528 | 1.14921 | 1.24076 | 1.31693 |
| 39 | 0.29173 | 0.50061 | 0.65261 | 0.77110 | 0.86760 | 0.94866 | 1.01830 | 1.13320 | 1.22544 | 1.30216 |
| 40 | 0.26572 | 0.47804 | 0.63210 | 0.75197 | 0.84950 | 0.93134 | 1.00161 | 1.11746 | 1.21041 | 1.28767 |
| 41 | 0.23990 | 0.45571 | 0.61185 | 0.73312 | 0.83167 | 0.91429 | 0.98520 | 1.10200 | 1.19565 | 1.27344 |
| 42 | 0.21423 | 0.43361 | 0.59184 | 0.71453 | 0.81410 | 0.89751 | 0.96905 | 1.08680 | 1.18114 | 1.25975 |
| 43 | 0.18870 | 0.41172 | 0.57208 | 0.69618 | 0.79678 | 0.88098 | 0.93514 | 1.07185 | 1.16688 | 1.24574 |
| 44 | 0.16330 | 0.39002 | 0.55253 | 0.67806 | 0.77969 | 0.86469 | 0.93748 | 1.05713 | 1.15285 | 1.23225 |
| 45 | 0.13800 | 0.36851 | 0.53319 | 0.66016 | 0.76283 | 0.84862 | 0.92204 | 1.04264 | 1.13904 | 1.21897 |
| 46 | 0.11279 | 0.34717 | 0.51405 | 0.64247 | 0.74619 | 0.83277 | 0.90682 | 1.02836 | 1.12545 | 1.20590 |
| 47 | 0.08765 | 0.32598 | 0.49509 | 0.62498 | 0.72975 | 0.81712 | 0.89180 | 1.01429 | 1.11207 | 1.19304 |
| 48 | 0.06257 | 0.30494 | 0.47632 | 0.60768 | 0.71350 | 0.80168 | 0.87699 | 1.00042 | 1.09888 | 1.18037 |
| 49 | 0.03753 | 0.28403 | 0.45770 | 0.59056 | 0.69744 | 0.78642 | 0.86236 | 1.98674 | 1.08587 | 1.16789 |
| 50 | 0.01251 | 0.26325 | 0.43925 | 0.57361 | 0.68156 | 0.77134 | 0.84792 | 0.97324 | 1.07305 | 1.15559 |

| $\frac{n}{k}$ | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 |
|---------------|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 51 | | 0.24258 | 0.42094 | 0.55682 | 0.66585 | 0.75644 | 0.83365 | 0.95991 | 1.06041 | 1.14346 |
| 52 | | 0.22201 | 0.40278 | 0.54019 | 0.65030 | 0.74170 | 0.81955 | 0.94676 | 1.04793 | 1.13149 |
| 53 | | 0.20154 | 0.38475 | 0.52371 | 0.63490 | 0.72712 | 0.80561 | 0.93376 | 1.03561 | 1.11969 |
| 54 | | 0.18115 | 0.36684 | 0.50737 | 0.61966 | 0.71270 | 0.79183 | 0.92093 | 1.02345 | 1.10804 |
| 55 | | 0.16084 | 0.34904 | 0.49116 | 0.60456 | 0.69842 | 0.77819 | 0.90824 | 1.01144 | 1.09654 |
| 56 | | 0.14059 | 0.33136 | 0.47508 | 0.58959 | 0.68428 | 0.76470 | 0.89570 | 0.99957 | 1.08518 |
| 57 | | 0.12040 | 0.31378 | 0.45913 | 0.57476 | 0.67028 | 0.75135 | 0.88329 | 0.98784 | 1.07396 |
| 58 | | 0.10026 | 0.29630 | 0.44329 | 0.56005 | 0.65641 | 0.73812 | 0.87102 | 0.97624 | 1.06287 |
| 59 | | 0.08016 | 0.27891 | 0.42756 | 0.54546 | 0.64267 | 0.72503 | 0.85888 | 0.96478 | 1.05192 |
| 60 | | 0.06009 | 0.26160 | 0.41193 | 0.53099 | 0.62904 | 0.71206 | 0.84687 | 0.95344 | 1.04108 |
| 61 | | 0.04005 | 0.24437 | 0.39641 | 0.51663 | 0.61553 | 0.69921 | 0.83498 | 0.94222 | 1.03037 |
| 62 | | 0.02002 | 0.22721 | 0.38098 | 0.50237 | 0.60213 | 0.68647 | 0.82320 | 0.93112 | 1.01978 |
| 63 | | 0.00000 | 0.21012 | 0.36564 | 0.48822 | 0.58884 | 0.67384 | 0.81154 | 0.92013 | 1.00930 |
| 64 | | | 0.19309 | 0.35039 | 0.47416 | 0.57566 | 0.66132 | 0.79998 | 0.90925 | 0.99893 |
| 65 | | | 0.17612 | 0.33521 | 0.46020 | 0.56257 | 0.64891 | 0.78854 | 0.89848 | 0.98866 |
| 66 | | | 0.15919 | 0.32012 | 0.44632 | 0.54958 | 0.63659 | 0.77719 | 0.88782 | 0.97850 |
| 67 | | | 0.14232 | 0.30510 | 0.43253 | 0.53668 | 0.36244 | 0.76595 | 0.87725 | 0.96844 |
| 68 | | | 0.12548 | 0.29014 | 0.41882 | 0.52386 | 0.61224 | 0.75480 | 0.86678 | 0.95848 |
| 69 | | | 0.10868 | 0.27525 | 0.40519 | 0.51114 | 0.60020 | 0.74374 | 0.85640 | 0.94861 |
| 70 | | | 0.09191 | 0.26042 | 0.39164 | 0.49850 | 0.58824 | 0.73277 | 0.84612 | 0.93883 |
| 71 | | | 0.07516 | 0.24565 | 0.37816 | 0.48593 | 0.57637 | 0.72189 | 0.83592 | 0.92914 |
| 72 | | | 0.05844 | 0.23093 | 0.36474 | 0.47344 | 0.56458 | 0.71110 | 0.82581 | 0.91954 |
| 73 | | | 0.04173 | 0.21626 | 0.35139 | 0.46103 | 0.55287 | 0.70039 | 0.81579 | 0.91002 |
| 74 | | | 0.02503 | 0.20164 | 0.33811 | 0.44869 | 0.54124 | 0.68976 | 0.80584 | 0.90058 |
| 75 | | | 0.00834 | 0.18706 | 0.32488 | 0.43641 | 0.52967 | 0.67920 | 0.79598 | 0.89122 |
| 76 | | | | 0.17252 | 0.31171 | 0.42430 | 0.51818 | 0.66872 | 0.78619 | 0.88194 |
| 77 | | | | 0.15802 | 0.29859 | 0.41205 | 0.50676 | 0.65831 | 0.77648 | 0.87274 |
| 78 | | | | 0.14355 | 0.28553 | 0.39997 | 0.49540 | 0.64798 | 0.76684 | 0.86361 |
| 79 | | | | 0.12911 | 0.27251 | 0.38794 | 0.48410 | 0.63771 | 0.75727 | 0.85455 |
| 80 | | | | 0.11470 | 0.25954 | 0.37596 | 0.47287 | 0.62751 | 0.74777 | 0.84556 |
| 81 | | | | 0.10031 | 0.24661 | 0.36404 | 0.46169 | 0.61738 | 0.73833 | 0.83663 |
| 82 | | | | 0.08594 | 0.23373 | 0.35218 | 0.45058 | 0.60730 | 0.72896 | 0.82778 |
| 83 | | | | 0.07159 | 0.22088 | 0.34036 | 0.43952 | 0.59729 | 0.71966 | 0.81899 |
| 84 | | | | 0.05725 | 0.20807 | 0.32859 | 0.42851 | 0.58734 | 0.71041 | 0.81026 |
| 85 | | | | 0.04293 | 0.19529 | 0.31686 | 0.41755 | 0.57745 | 0.70123 | 0.80159 |
| 86 | | | | 0.02862 | 0.18254 | 0.30518 | 0.40665 | 0.56731 | 0.69211 | 0.79298 |
| 87 | | | | 0.01431 | 0.16983 | 0.29354 | 0.39579 | 0.55783 | 0.68304 | 0.78443 |
| 88 | | | | 0.00000 | 0.15714 | 0.28194 | 0.38498 | 0.54810 | 0.67403 | 0.77594 |
| 89 | | | | | 0.01445 | 0.27038 | 0.37421 | 0.53842 | 0.66507 | 0.76750 |
| 90 | | | | | 0.13184 | 0.25885 | 0.36349 | 0.52879 | 0.65617 | 0.75912 |
| 91 | | | | | 0.11922 | 0.24736 | 0.35280 | 0.51922 | 0.64732 | 0.75079 |
| 92 | | | | | 0.10662 | 0.23590 | 0.34216 | 0.50968 | 0.63852 | 0.74252 |
| 93 | | | | | 0.09404 | 0.22447 | 0.33156 | 0.50020 | 0.62976 | 0.73429 |
| 94 | | | | | 0.08147 | 0.21307 | 0.32099 | 0.49076 | 0.62106 | 0.72611 |
| 95 | | | | | 0.06891 | 0.20170 | 0.31046 | 0.48136 | 0.61240 | 0.71798 |
| 96 | | | | | 0.05637 | 0.19035 | 0.29997 | 0.47201 | 0.60379 | 0.70990 |
| 97 | | | | | 0.04383 | 0.17903 | 0.28951 | 0.46269 | 0.59522 | 0.70186 |
| 98 | | | | | 0.03130 | 0.16773 | 0.27907 | 0.45342 | 0.58670 | 0.69387 |
| 99 | | | | | 0.01878 | 0.15645 | 0.26867 | 0.44449 | 0.57822 | 0.68593 |
| 100 | | | | | 0.00626 | 0.14520 | 0.25830 | 0.43499 | 0.56978 | 0.67802 |
| 101 | | | | | | 0.13396 | 0.24796 | 0.42583 | 0.56138 | 0.67016 |
| 102 | | | | | | 0.12274 | 0.23764 | 0.41670 | 0.55302 | 0.66234 |
| 103 | | | | | | 0.11153 | 0.22735 | 0.40761 | 0.54470 | 0.65456 |

| $\frac{n}{k}$ | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 |
|---------------|-----|-----|-----|-----|-----|---------|---------|---------|---------|---------|
| 104 | | | | | | 0.10034 | 0.21708 | 0.39856 | 0.53641 | 0.64682 |
| 105 | | | | | | 0.08916 | 0.20683 | 0.38953 | 0.52817 | 0.63912 |
| 106 | | | | | | 0.07799 | 0.19661 | 0.38054 | 0.51996 | 0.63145 |
| 107 | | | | | | 0.06683 | 0.18641 | 0.37158 | 0.51178 | 0.62383 |
| 108 | | | | | | 0.05568 | 0.17622 | 0.36265 | 0.50364 | 0.61624 |
| 109 | | | | | | 0.04453 | 0.16606 | 0.35375 | 0.49553 | 0.60868 |
| 110 | | | | | | 0.03340 | 0.15591 | 0.34487 | 0.48745 | 0.60116 |
| 111 | | | | | | 0.02226 | 0.14577 | 0.33602 | 0.47941 | 0.59367 |
| 112 | | | | | | 0.01113 | 0.13566 | 0.32720 | 0.47139 | 0.58622 |
| 113 | | | | | | 0.00000 | 0.12555 | 0.31841 | 0.46341 | 0.57880 |
| 114 | | | | | | | 0.11546 | 0.30963 | 0.45545 | 0.57141 |
| 115 | | | | | | | 0.10538 | 0.30089 | 0.44753 | 0.56405 |
| 116 | | | | | | | 0.09531 | 0.29216 | 0.43963 | 0.55672 |
| 117 | | | | | | | 0.08526 | 0.28346 | 0.43176 | 0.54942 |
| 118 | | | | | | | 0.07520 | 0.27478 | 0.42392 | 0.54215 |
| 119 | | | | | | | 0.06516 | 0.26612 | 0.41610 | 0.53491 |
| 120 | | | | | | | 0.05513 | 0.25748 | 0.40831 | 0.52770 |
| 121 | | | | | | | 0.04510 | 0.24885 | 0.40054 | 0.52051 |
| 122 | | | | | | | 0.03507 | 0.24025 | 0.39280 | 0.51335 |
| 123 | | | | | | | 0.02505 | 0.23167 | 0.38508 | 0.50622 |
| 124 | | | | | | | 0.01503 | 0.22310 | 0.37738 | 0.49911 |
| 125 | | | | | | | 0.00501 | 0.21455 | 0.36970 | 0.49203 |
| 126 | | | | | | | | 0.20601 | 0.36205 | 0.48497 |
| 127 | | | | | | | | 0.19749 | 0.35442 | 0.47794 |
| 128 | | | | | | | | 0.18898 | 0.34681 | 0.47093 |
| 129 | | | | | | | | 0.18049 | 0.33922 | 0.46394 |
| 130 | | | | | | | | 0.17201 | 0.33164 | 0.45698 |
| 131 | | | | | | | | 0.16354 | 0.32409 | 0.45004 |
| 132 | | | | | | | | 0.15508 | 0.31656 | 0.44312 |
| 133 | | | | | | | | 0.14664 | 0.30904 | 0.43622 |
| 134 | | | | | | | | 0.13820 | 0.30154 | 0.42934 |
| 135 | | | | | | | | 0.12978 | 0.29406 | 0.42248 |
| 136 | | | | | | | | 0.12136 | 0.28659 | 0.41564 |
| 137 | | | | | | | | 0.11296 | 0.27914 | 0.40883 |
| 138 | | | | | | | | 0.10456 | 0.27171 | 0.40203 |
| 139 | | | | | | | | 0.09617 | 0.26429 | 0.39524 |
| 140 | | | | | | | | 0.08778 | 0.25689 | 0.38843 |
| 141 | | | | | | | | 0.07940 | 0.24950 | 0.38174 |
| 142 | | | | | | | | 0.07103 | 0.24212 | 0.37501 |
| 143 | | | | | | | | 0.06266 | 0.23475 | 0.36830 |
| 144 | | | | | | | | 0.05430 | 0.22740 | 0.36160 |
| 145 | | | | | | | | 0.04594 | 0.22006 | 0.35492 |
| 146 | | | | | | | | 0.03758 | 0.21274 | 0.34826 |
| 147 | | | | | | | | 0.02923 | 0.20542 | 0.34161 |
| 148 | | | | | | | | 0.02088 | 0.19812 | 0.33498 |
| 149 | | | | | | | | 0.01252 | 0.19082 | 0.32836 |
| 150 | | | | | | | | 0.00417 | 0.18354 | 0.32176 |
| 151 | | | | | | | | | 0.17626 | 0.31517 |
| 152 | | | | | | | | | 0.16900 | 0.30860 |
| 153 | | | | | | | | | 0.16174 | 0.30203 |
| 154 | | | | | | | | | 0.15450 | 0.29548 |
| 155 | | | | | | | | | 0.14726 | 0.28895 |
| 156 | | | | | | | | | 0.14003 | 0.28242 |

| $\frac{n}{k}$ | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 300 | 350 | 400 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|---------|---------|
| 157 | | | | | | | | | 0.13280 | 0.27591 |
| 158 | | | | | | | | | 0.12558 | 0.26941 |
| 159 | | | | | | | | | 0.11837 | 0.26292 |
| 160 | | | | | | | | | 0.11117 | 0.25644 |
| 161 | | | | | | | | | 0.10397 | 0.24998 |
| 162 | | | | | | | | | 0.09678 | 0.24352 |
| 163 | | | | | | | | | 0.08959 | 0.23707 |
| 164 | | | | | | | | | 0.08240 | 0.23064 |
| 165 | | | | | | | | | 0.07522 | 0.22421 |
| 166 | | | | | | | | | 0.06805 | 0.21779 |
| 167 | | | | | | | | | 0.06088 | 0.21138 |
| 168 | | | | | | | | | 0.03571 | 0.20498 |
| 169 | | | | | | | | | 0.04654 | 0.19859 |
| 170 | | | | | | | | | 0.03938 | 0.19220 |
| 171 | | | | | | | | | 0.03221 | 0.18583 |
| 172 | | | | | | | | | 0.02505 | 0.17946 |
| 173 | | | | | | | | | 0.01789 | 0.17310 |
| 174 | | | | | | | | | 0.01074 | 0.16674 |
| 175 | | | | | | | | | 0.00358 | 0.16040 |
| 176 | | | | | | | | | | 0.15406 |
| 177 | | | | | | | | | | 0.14772 |
| 178 | | | | | | | | | | 0.14139 |
| 179 | | | | | | | | | | 0.13507 |
| 180 | | | | | | | | | | 0.12875 |
| 181 | | | | | | | | | | 0.12244 |
| 182 | | | | | | | | | | 0.11613 |
| 183 | | | | | | | | | | 0.10983 |
| 184 | | | | | | | | | | 0.10353 |
| 185 | | | | | | | | | | 0.09723 |
| 186 | | | | | | | | | | 0.09094 |
| 187 | | | | | | | | | | 0.08465 |
| 188 | | | | | | | | | | 0.07837 |
| 189 | | | | | | | | | | 0.07209 |
| 190 | | | | | | | | | | 0.06581 |
| 191 | | | | | | | | | | 0.05954 |
| 192 | | | | | | | | | | 0.05326 |
| 193 | | | | | | | | | | 0.04699 |
| 194 | | | | | | | | | | 0.04072 |
| 195 | | | | | | | | | | 0.03445 |
| 196 | | | | | | | | | | 0.02819 |
| 197 | | | | | | | | | | 0.02192 |
| 198 | | | | | | | | | | 0.01566 |
| 199 | | | | | | | | | | 0.00939 |
| 200 | | | | | | | | | | 0.00313 |

ที่มา : Harter H. Leon. Biometrika, 1961 v.45, p.151-165

ตาราง ก5

แสดง Percentage points of Shapiro-Francia test (W')

| $n \backslash \alpha$ | 0.01 | 0.05 | 0.10 | 0.15 | 0.20 | 0.50 | 0.80 | 0.85 | 0.90 | 0.95 | 0.99 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 35 | 0.919 | 0.943 | 0.952 | 0.956 | 0.964 | 0.976 | 0.982 | 0.985 | 0.987 | 0.989 | 0.992 |
| 50 | 0.935 | 0.953 | 0.963 | 0.968 | 0.971 | 0.981 | 0.987 | 0.988 | 0.990 | 0.991 | 0.994 |
| 51 | 0.935 | 0.954 | 0.964 | 0.968 | 0.971 | 0.981 | 0.988 | 0.989 | 0.990 | 0.992 | 0.994 |
| 53 | 0.938 | 0.957 | 0.964 | 0.969 | 0.972 | 0.982 | 0.988 | 0.989 | 0.990 | 0.992 | 0.994 |
| 55 | 0.940 | 0.958 | 0.965 | 0.971 | 0.973 | 0.983 | 0.988 | 0.990 | 0.991 | 0.992 | 0.994 |
| 57 | 0.944 | 0.961 | 0.966 | 0.971 | 0.974 | 0.983 | 0.989 | 0.990 | 0.991 | 0.992 | 0.994 |
| 59 | 0.945 | 0.962 | 0.967 | 0.972 | 0.975 | 0.983 | 0.989 | 0.990 | 0.991 | 0.992 | 0.994 |
| 61 | 0.947 | 0.963 | 0.968 | 0.973 | 0.975 | 0.984 | 0.990 | 0.990 | 0.991 | 0.992 | 0.994 |
| 63 | 0.947 | 0.964 | 0.970 | 0.973 | 0.976 | 0.984 | 0.990 | 0.991 | 0.992 | 0.993 | 0.994 |
| 65 | 0.948 | 0.965 | 0.971 | 0.974 | 0.976 | 0.985 | 0.990 | 0.991 | 0.992 | 0.993 | 0.995 |
| 67 | 0.950 | 0.966 | 0.971 | 0.974 | 0.977 | 0.985 | 0.990 | 0.991 | 0.992 | 0.993 | 0.995 |
| 69 | 0.951 | 0.966 | 0.972 | 0.976 | 0.978 | 0.986 | 0.990 | 0.991 | 0.992 | 0.993 | 0.995 |
| 71 | 0.953 | 0.967 | 0.972 | 0.976 | 0.978 | 0.986 | 0.990 | 0.991 | 0.992 | 0.994 | 0.995 |
| 73 | 0.956 | 0.968 | 0.973 | 0.976 | 0.979 | 0.986 | 0.991 | 0.992 | 0.993 | 0.994 | 0.995 |
| 75 | 0.956 | 0.969 | 0.973 | 0.976 | 0.979 | 0.986 | 0.991 | 0.992 | 0.993 | 0.994 | 0.995 |
| 77 | 0.957 | 0.969 | 0.974 | 0.977 | 0.980 | 0.987 | 0.991 | 0.992 | 0.993 | 0.994 | 0.996 |
| 79 | 0.957 | 0.970 | 0.975 | 0.978 | 0.980 | 0.987 | 0.991 | 0.992 | 0.993 | 0.994 | 0.996 |
| 81 | 0.958 | 0.970 | 0.975 | 0.979 | 0.981 | 0.987 | 0.992 | 0.992 | 0.993 | 0.994 | 0.996 |
| 83 | 0.960 | 0.971 | 0.976 | 0.979 | 0.981 | 0.988 | 0.992 | 0.992 | 0.993 | 0.994 | 0.996 |
| 85 | 0.961 | 0.972 | 0.977 | 0.980 | 0.981 | 0.988 | 0.992 | 0.992 | 0.993 | 0.994 | 0.996 |
| 87 | 0.961 | 0.972 | 0.977 | 0.980 | 0.982 | 0.988 | 0.992 | 0.993 | 0.994 | 0.994 | 0.996 |
| 89 | 0.961 | 0.972 | 0.977 | 0.981 | 0.982 | 0.988 | 0.992 | 0.993 | 0.994 | 0.995 | 0.996 |
| 91 | 0.962 | 0.973 | 0.978 | 0.981 | 0.983 | 0.989 | 0.992 | 0.993 | 0.994 | 0.995 | 0.996 |
| 93 | 0.963 | 0.973 | 0.979 | 0.981 | 0.983 | 0.989 | 0.992 | 0.993 | 0.994 | 0.995 | 0.996 |
| 95 | 0.965 | 0.974 | 0.979 | 0.981 | 0.983 | 0.989 | 0.993 | 0.993 | 0.994 | 0.995 | 0.996 |
| 97 | 0.965 | 0.975 | 0.979 | 0.982 | 0.984 | 0.989 | 0.993 | 0.993 | 0.994 | 0.995 | 0.996 |
| 99 | 0.967 | 0.976 | 0.980 | 0.982 | 0.984 | 0.989 | 0.993 | 0.994 | 0.994 | 0.995 | 0.996 |

แสดง Percentage points of Z_{α} for testing normality

| n | 0.001 | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | 0.999 |
|-----|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5 | -0.351 | -0.303 | -0.186 | -0.080 | 0.093 | 0.262 | 0.435 | 0.613 | 0.817 | 1.083 | 1.457 | 2.093 | 2.720 | 4.188 | 5.568 |
| 6 | -0.133 | -0.063 | 0.066 | 0.170 | 0.344 | 0.503 | 0.660 | 0.832 | 1.038 | 1.299 | 1.658 | 2.278 | 2.923 | 4.431 | 6.231 |
| 7 | 0.032 | 0.111 | 0.242 | 0.344 | 0.510 | 0.658 | 0.809 | 0.976 | 1.173 | 1.420 | 1.765 | 2.374 | 2.994 | 4.503 | 6.472 |
| 8 | 0.158 | 0.241 | 0.369 | 0.468 | 0.625 | 0.766 | 0.912 | 1.073 | 1.261 | 1.499 | 1.831 | 2.414 | 3.020 | 4.484 | 6.540 |
| 9 | 0.258 | 0.339 | 0.465 | 0.561 | 0.710 | 0.845 | 0.985 | 1.139 | 1.319 | 1.545 | 1.864 | 2.419 | 2.993 | 4.409 | 6.442 |
| 10 | 0.335 | 0.416 | 0.538 | 0.632 | 0.774 | 0.904 | 1.038 | 1.184 | 1.356 | 1.575 | 1.879 | 2.414 | 2.970 | 4.318 | 6.265 |
| 12 | 0.453 | 0.530 | 0.645 | 0.730 | 0.862 | 0.983 | 1.106 | 1.242 | 1.401 | 1.602 | 1.885 | 2.375 | 2.882 | 4.117 | 5.978 |
| 14 | 0.533 | 0.607 | 0.716 | 0.795 | 0.918 | 1.029 | 1.144 | 1.272 | 1.420 | 1.607 | 1.866 | 2.316 | 2.783 | 3.939 | 5.641 |
| 16 | 0.592 | 0.663 | 0.766 | 0.840 | 0.954 | 1.059 | 1.166 | 1.285 | 1.423 | 1.596 | 1.838 | 2.256 | 2.689 | 3.740 | 5.287 |
| 18 | 0.639 | 0.707 | 0.803 | 0.873 | 0.981 | 1.079 | 1.180 | 1.291 | 1.419 | 1.582 | 1.810 | 2.199 | 2.601 | 3.568 | 5.031 |
| 20 | 0.674 | 0.739 | 0.831 | 0.897 | 0.999 | 1.092 | 1.187 | 1.291 | 1.414 | 1.567 | 1.780 | 2.146 | 2.521 | 3.427 | 4.780 |
| 25 | 0.737 | 0.796 | 0.876 | 0.935 | 1.025 | 1.106 | 1.190 | 1.282 | 1.389 | 1.524 | 1.710 | 2.029 | 2.353 | 3.126 | 4.246 |
| 30 | 0.776 | 0.829 | 0.902 | 0.955 | 1.036 | 1.109 | 1.184 | 1.266 | 1.362 | 1.482 | 1.648 | 1.931 | 2.217 | 2.902 | 3.914 |
| 40 | 0.823 | 0.868 | 0.929 | 0.973 | 1.041 | 1.102 | 1.165 | 1.233 | 1.313 | 1.413 | 1.550 | 1.783 | 2.015 | 2.564 | 3.380 |
| 50 | 0.847 | 0.887 | 0.941 | 0.979 | 1.038 | 1.091 | 1.145 | 1.204 | 1.273 | 1.358 | 1.475 | 1.674 | 1.873 | 2.342 | 3.028 |
| 70 | 0.874 | 0.906 | 0.949 | 0.979 | 1.026 | 1.068 | 1.111 | 1.157 | 1.212 | 1.279 | 1.371 | 1.526 | 1.682 | 2.046 | 2.567 |
| 100 | 0.890 | 0.915 | 0.949 | 0.973 | 1.009 | 1.042 | 1.075 | 1.111 | 1.152 | 1.204 | 1.275 | 1.394 | 1.514 | 1.791 | 2.193 |
| 150 | 0.900 | 0.919 | 0.944 | 0.962 | 0.989 | 1.013 | 1.038 | 1.064 | 1.095 | 1.133 | 1.184 | 1.271 | 1.359 | 1.562 | 1.856 |
| 200 | 0.904 | 0.919 | 0.939 | 0.954 | 0.976 | 0.995 | 1.014 | 1.036 | 1.060 | 1.090 | 1.132 | 1.202 | 1.272 | 1.435 | 1.670 |
| 300 | 0.906 | 0.918 | 0.932 | 0.943 | 0.959 | 0.973 | 0.987 | 1.002 | 1.020 | 1.042 | 1.072 | 1.122 | 1.172 | 1.289 | 1.465 |
| 500 | 0.906 | 0.914 | 0.924 | 0.931 | 0.942 | 0.951 | 0.960 | 0.970 | 0.982 | 0.996 | 1.016 | 1.048 | 1.081 | 1.159 | 1.275 |

แสดง Percentage points of Z_c for testing normality

| n | 0.001 | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | 0.999 |
|-----|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5 | 0.664 | 0.724 | 0.874 | 1.007 | 1.252 | 1.501 | 1.749 | 2.002 | 2.261 | 2.577 | 3.002 | 3.639 | 4.213 | 5.460 | 6.757 |
| 6 | 0.704 | 0.808 | 1.003 | 1.176 | 1.475 | 1.756 | 2.028 | 2.298 | 2.602 | 2.967 | 3.433 | 4.158 | 4.849 | 6.382 | 8.280 |
| 7 | 0.745 | 0.881 | 1.120 | 1.322 | 1.662 | 1.966 | 2.255 | 2.555 | 2.891 | 3.288 | 3.797 | 4.610 | 5.385 | 7.196 | 9.635 |
| 8 | 0.781 | 0.945 | 1.218 | 1.446 | 1.819 | 2.144 | 2.453 | 2.778 | 3.141 | 3.567 | 4.123 | 5.007 | 5.864 | 7.908 | 10.954 |
| 9 | 0.813 | 0.997 | 1.306 | 1.556 | 1.955 | 2.299 | 2.631 | 2.979 | 3.362 | 3.810 | 4.404 | 5.350 | 6.267 | 8.545 | 12.102 |
| 10 | 0.842 | 1.049 | 1.388 | 1.658 | 2.079 | 2.438 | 2.789 | 3.155 | 3.559 | 4.035 | 4.659 | 5.663 | 6.650 | 9.138 | 13.115 |
| 12 | 0.895 | 1.138 | 1.526 | 1.831 | 2.290 | 2.682 | 3.065 | 3.463 | 3.902 | 4.424 | 5.105 | 6.209 | 7.304 | 10.156 | 15.147 |
| 14 | 0.935 | 1.212 | 1.645 | 1.972 | 2.464 | 2.888 | 3.298 | 3.723 | 4.195 | 4.755 | 5.486 | 6.669 | 7.862 | 11.103 | 16.969 |
| 16 | 0.976 | 1.277 | 1.746 | 2.096 | 2.616 | 3.064 | 3.495 | 3.944 | 4.443 | 5.036 | 5.808 | 7.065 | 8.352 | 11.838 | 18.474 |
| 18 | 1.014 | 1.334 | 1.838 | 2.207 | 2.754 | 3.222 | 3.675 | 4.147 | 4.669 | 5.287 | 6.099 | 7.422 | 8.767 | 12.493 | 19.899 |
| 20 | 1.046 | 1.396 | 1.924 | 2.309 | 2.875 | 3.361 | 3.835 | 4.328 | 4.869 | 5.511 | 6.362 | 7.752 | 9.157 | 13.150 | 21.149 |
| 25 | 1.120 | 1.519 | 2.103 | 2.519 | 3.137 | 3.664 | 4.176 | 4.707 | 5.298 | 5.994 | 6.918 | 8.438 | 9.984 | 14.432 | 23.753 |
| 30 | 1.170 | 1.618 | 2.246 | 2.693 | 3.349 | 3.910 | 4.456 | 5.023 | 5.649 | 6.391 | 7.375 | 8.998 | 10.662 | 15.580 | 26.091 |
| 40 | 1.285 | 1.783 | 2.483 | 2.972 | 3.693 | 4.307 | 4.901 | 5.521 | 6.209 | 7.031 | 8.109 | 9.888 | 11.733 | 17.223 | 29.333 |
| 50 | 1.366 | 1.912 | 2.674 | 3.193 | 3.957 | 4.612 | 5.248 | 5.913 | 6.648 | 7.522 | 8.683 | 10.594 | 12.583 | 18.480 | 31.707 |
| 70 | 1.512 | 2.131 | 2.963 | 3.535 | 4.367 | 5.079 | 5.771 | 6.499 | 7.302 | 8.262 | 9.540 | 11.640 | 13.835 | 20.399 | 35.532 |
| 100 | 1.693 | 2.369 | 3.279 | 3.902 | 4.810 | 5.590 | 6.344 | 7.132 | 8.011 | 9.059 | 10.452 | 12.758 | 15.171 | 22.242 | 39.126 |
| 150 | 1.891 | 2.653 | 3.655 | 4.339 | 5.327 | 6.175 | 7.099 | 7.962 | 8.818 | 9.970 | 11.488 | 14.027 | 16.628 | 24.405 | 42.354 |
| 200 | 2.043 | 2.867 | 3.923 | 4.649 | 5.696 | 6.593 | 7.464 | 8.376 | 9.391 | 10.613 | 12.244 | 14.934 | 17.714 | 25.839 | 44.611 |
| 300 | 2.298 | 3.196 | 4.338 | 5.118 | 6.245 | 7.209 | 8.149 | 9.123 | 10.220 | 11.530 | 13.276 | 16.179 | 19.139 | 27.523 | 46.663 |
| 500 | 2.609 | 3.596 | 4.861 | 5.702 | 6.932 | 7.977 | 8.990 | 10.055 | 11.246 | 12.674 | 14.567 | 17.717 | 20.927 | 29.760 | 49.888 |

Percent Percentage points of Z_k for testing normality

| n | 0.001 | 0.01 | 0.05 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 0.95 | 0.99 | 0.999 |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 5 | 0.004 | 0.015 | 0.042 | 0.067 | 0.107 | 0.142 | 0.176 | 0.213 | 0.257 | 0.310 | 0.383 | 0.512 | 0.630 | 0.899 | 1.175 |
| 6 | 0.010 | 0.030 | 0.068 | 0.096 | 0.139 | 0.178 | 0.218 | 0.261 | 0.312 | 0.373 | 0.456 | 0.596 | 0.731 | 1.034 | 1.413 |
| 7 | 0.019 | 0.046 | 0.088 | 0.119 | 0.167 | 0.211 | 0.255 | 0.303 | 0.359 | 0.425 | 0.515 | 0.666 | 0.814 | 1.149 | 1.584 |
| 8 | 0.029 | 0.061 | 0.107 | 0.141 | 0.193 | 0.240 | 0.288 | 0.340 | 0.399 | 0.471 | 0.567 | 0.726 | 0.882 | 1.240 | 1.724 |
| 9 | 0.038 | 0.073 | 0.124 | 0.160 | 0.216 | 0.267 | 0.319 | 0.373 | 0.435 | 0.511 | 0.612 | 0.777 | 0.940 | 1.313 | 1.838 |
| 10 | 0.047 | 0.085 | 0.139 | 0.177 | 0.237 | 0.291 | 0.345 | 0.403 | 0.468 | 0.547 | 0.652 | 0.824 | 0.992 | 1.379 | 1.924 |
| 12 | 0.063 | 0.106 | 0.165 | 0.209 | 0.275 | 0.334 | 0.392 | 0.455 | 0.525 | 0.610 | 0.723 | 0.906 | 1.083 | 1.493 | 2.063 |
| 14 | 0.076 | 0.124 | 0.189 | 0.236 | 0.307 | 0.370 | 0.432 | 0.498 | 0.573 | 0.663 | 0.783 | 0.975 | 1.162 | 1.583 | 2.191 |
| 16 | 0.088 | 0.140 | 0.209 | 0.260 | 0.335 | 0.401 | 0.466 | 0.536 | 0.614 | 0.709 | 0.834 | 1.035 | 1.229 | 1.661 | 2.258 |
| 18 | 0.099 | 0.154 | 0.228 | 0.281 | 0.360 | 0.429 | 0.497 | 0.570 | 0.651 | 0.750 | 0.878 | 1.087 | 1.286 | 1.732 | 2.365 |
| 20 | 0.110 | 0.168 | 0.245 | 0.300 | 0.382 | 0.454 | 0.525 | 0.600 | 0.684 | 0.786 | 0.920 | 1.135 | 1.339 | 1.795 | 2.406 |
| 25 | 0.133 | 0.196 | 0.281 | 0.340 | 0.429 | 0.506 | 0.582 | 0.663 | 0.753 | 0.862 | 1.006 | 1.238 | 1.458 | 1.944 | 2.601 |
| 30 | 0.149 | 0.219 | 0.310 | 0.373 | 0.467 | 0.549 | 0.629 | 0.714 | 0.810 | 0.925 | 1.076 | 1.319 | 1.553 | 2.072 | 2.757 |
| 40 | 0.177 | 0.255 | 0.355 | 0.424 | 0.527 | 0.615 | 0.703 | 0.795 | 0.899 | 1.023 | 1.188 | 1.453 | 1.708 | 2.269 | 3.039 |
| 50 | 0.202 | 0.284 | 0.391 | 0.464 | 0.573 | 0.667 | 0.759 | 0.857 | 0.967 | 1.098 | 1.273 | 1.555 | 1.826 | 2.440 | 3.291 |
| 70 | 0.237 | 0.328 | 0.444 | 0.524 | 0.641 | 0.743 | 0.843 | 0.949 | 1.067 | 1.210 | 1.399 | 1.708 | 2.005 | 2.685 | 3.660 |
| 100 | 0.272 | 0.373 | 0.500 | 0.586 | 0.714 | 0.824 | 0.932 | 1.046 | 1.174 | 1.328 | 1.535 | 1.874 | 2.202 | 2.969 | 4.087 |
| 150 | 0.314 | 0.424 | 0.562 | 0.656 | 0.795 | 0.915 | 1.031 | 1.155 | 1.295 | 1.464 | 1.690 | 2.061 | 2.429 | 3.289 | 4.529 |
| 200 | 0.342 | 0.457 | 0.604 | 0.703 | 0.849 | 0.976 | 1.100 | 1.231 | 1.379 | 1.558 | 1.799 | 2.195 | 2.591 | 3.507 | 4.785 |
| 300 | 0.383 | 0.509 | 0.667 | 0.774 | 0.930 | 1.065 | 1.198 | 1.339 | 1.497 | 1.690 | 1.950 | 2.380 | 2.803 | 3.793 | 5.228 |
| 500 | 0.432 | 0.569 | 0.741 | 0.857 | 1.027 | 1.174 | 1.318 | 1.470 | 1.643 | 1.854 | 2.137 | 2.606 | 3.068 | 4.160 | 5.756 |