## Coeficientes $a_{in}$ para el contraste de Shapiro-Wilks

| i / n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0.7071 | | | | | | | | | | |
| 3 | 0.7071 | 0.0000 | | | | | | | | | |
| 4 | 0.6872 | 0.1677 | | | | | | | | | |
| 5 | 0.6646 | 0.2413 | 0.0000 | | | | | | | | |
| 6 | 0.6431 | 0.2806 | 0.0875 | | | | | | | | |
| 7 | 0.6233 | 0.3031 | 0.1401 | 0.0000 | | | | | | | |
| 8 | 0.6052 | 0.3164 | 0.1743 | 0.0561 | | | | | | | |
| 9 | 0.5888 | 0.3244 | 0.1976 | 0.0947 | 0.0000 | | | | | | |
| 10 | 0.5739 | 0.3291 | 0.2141 | 0.1224 | 0.0399 | | | | | | |
| 11 | 0.5601 | 0.3315 | 0.2260 | 0.1429 | 0.0695 | 0.0000 | | | | | |
| 12 | 0.5475 | 0.3325 | 0.2347 | 0.1586 | 0.0922 | 0.0303 | | | | | |
| 13 | 0.5359 | 0.3325 | 0.2412 | 0.1707 | 0.1099 | 0.0539 | 0.0000 | | | | |
| 14 | 0.5251 | 0.3318 | 0.2495 | 0.1802 | 0.1240 | 0.0727 | 0.0240 | | | | |
| 15 | 0.5150 | 0.3306 | 0.2495 | 0.1878 | 0.1353 | 0.0880 | 0.0433 | 0.0000 | | | |
| 16 | 0.5056 | 0.3290 | 0.2521 | 0.1988 | 0.1447 | 0.1005 | 0.0593 | 0.0196 | | | |
| 17 | 0.4968 | 0.3273 | 0.2540 | 0.1988 | 0.1524 | 0.1109 | 0.0725 | 0.0359 | 0.0000 | | |
| 18 | 0.4886 | 0.3253 | 0.2553 | 0.2027 | 0.1587 | 0.1197 | 0.0837 | 0.0496 | 0.0163 | | |
| 19 | 0.4808 | 0.3232 | 0.2561 | 0.2059 | 0.1641 | 0.1271 | 0.0932 | 0.0612 | 0.0303 | 0.0000 | |
| 20 | 0.4734 | 0.3211 | 0.2565 | 0.2085 | 0.1686 | 0.1334 | 0.1013 | 0.0711 | 0.0422 | 0.0140 | |
| 21 | 0.4643 | 0.3185 | 0.2578 | 0.2119 | 0.1736 | 0.1339 | 0.1092 | 0.0804 | 0.0530 | 0.0263 | 0.0000 |
| 22 | 0.4590 | 0.3156 | 0.2571 | 0.2131 | 0.1764 | 0.1443 | 0.1150 | 0.0878 | 0.0618 | 0.0368 | 0.0122 |
| 23 | 0.4542 | 0.3126 | 0.2563 | 0.2139 | 0.1787 | 0.1480 | 0.1201 | 0.0941 | 0.0696 | 0.0459 | 0.0228 |
| 24 | 0.4493 | 0.3098 | 0.2554 | 0.2145 | 0.1807 | 0.1512 | 0.1245 | 0.0997 | 0.0764 | 0.0539 | 0.0321 |
| 25 | 0.4450 | 0.3069 | 0.2543 | 0.2148 | 0.1822 | 0.1539 | 0.1283 | 0.1046 | 0.0823 | 0.0610 | 0.0403 |
| 26 | 0.4407 | 0.3043 | 0.2533 | 0.2151 | 0.1836 | 0.1563 | 0.1316 | 0.1089 | 0.0876 | 0.0672 | 0.0476 |
| 27 | 0.4366 | 0.3018 | 0.2522 | 0.2152 | 0.1848 | 0.1584 | 0.1346 | 0.1128 | 0.0923 | 0.0728 | 0.0540 |
| 28 | 0.4328 | 0.2992 | 0.2510 | 0.2151 | 0.1857 | 0.1601 | 0.1372 | 0.1162 | 0.0965 | 0.0778 | 0.0598 |
| 29 | 0.4291 | 0.2968 | 0.2499 | 0.2150 | 0.1864 | 0.1616 | 0.1395 | 0.1192 | 0.1002 | 0.0822 | 0.0650 |
| 30 | 0.4254 | 0.2944 | 0.2487 | 0.2148 | 0.1870 | 0.1630 | 0.1415 | 0.1219 | 0.1036 | 0.0862 | 0.0697 |
| 31 | 0.4220 | 0.2921 | 0.2475 | 0.2145 | 0.1874 | 0.1641 | 0.1433 | 0.1243 | 0.1066 | 0.0899 | 0.0739 |
| 32 | 0.4188 | 0.2898 | 0.2463 | 0.2141 | 0.1878 | 0.1651 | 0.1449 | 0.1265 | 0.1093 | 0.0931 | 0.0777 |
| 33 | 0.4156 | 0.2876 | 0.2451 | 0.2137 | 0.1880 | 0.1660 | 0.1463 | 0.1284 | 0.1118 | 0.0961 | 0.0812 |
| 34 | 0.4127 | 0.2854 | 0.2439 | 0.2132 | 0.1882 | 0.1667 | 0.1475 | 0.1301 | 0.1140 | 0.0988 | 0.0844 |
| 35 | 0.4096 | 0.2834 | 0.2427 | 0.2127 | 0.1883 | 0.1673 | 0.1487 | 0.1317 | 0.1160 | 0.1013 | 0.0873 |
| 36 | 0.4068 | 0.2813 | 0.2415 | 0.2121 | 0.1883 | 0.1678 | 0.1496 | 0.1331 | 0.1179 | 0.1036 | 0.0900 |
| 37 | 0.4040 | 0.2794 | 0.2403 | 0.2116 | 0.1883 | 0.1683 | 0.1505 | 0.1344 | 0.1196 | 0.1056 | 0.0924 |
| 38 | 0.4015 | 0.2774 | 0.2391 | 0.2110 | 0.1881 | 0.1686 | 0.1513 | 0.1356 | 0.1211 | 0.1075 | 0.0947 |
| 39 | 0.3989 | 0.2755 | 0.2380 | 0.2104 | 0.1880 | 0.1689 | 0.1520 | 0.1366 | 0.1225 | 0.1092 | 0.0967 |
| 40 | 0.3964 | 0.2737 | 0.2368 | 0.2098 | 0.1878 | 0.1691 | 0.1526 | 0.1376 | 0.1237 | 0.1108 | 0.0986 |
| 41 | 0.3940 | 0.2719 | 0.2357 | 0.2091 | 0.1876 | 0.1693 | 0.1531 | 0.1384 | 0.1249 | 0.1123 | 0.1004 |
| 42 | 0.3917 | 0.2701 | 0.2345 | 0.2085 | 0.1874 | 0.1694 | 0.1535 | 0.1392 | 0.1259 | 0.1136 | 0.1020 |
| 43 | 0.3894 | 0.2684 | 0.2334 | 0.2078 | 0.1871 | 0.1695 | 0.1539 | 0.1398 | 0.1269 | 0.1149 | 0.1035 |
| 44 | 0.3872 | 0.2667 | 0.2323 | 0.2072 | 0.1868 | 0.1695 | 0.1542 | 0.1405 | 0.1278 | 0.1160 | 0.1049 |
| 45 | 0.3850 | 0.2651 | 0.2313 | 0.2065 | 0.1865 | 0.1695 | 0.1545 | 0.1410 | 0.1286 | 0.1170 | 0.1062 |
| 46 | 0.3830 | 0.2635 | 0.2302 | 0.2058 | 0.1862 | 0.1695 | 0.1548 | 0.1415 | 0.1293 | 0.1180 | 0.1073 |
| 47 | 0.3808 | 0.2620 | 0.2291 | 0.2052 | 0.1859 | 0.1695 | 0.1550 | 0.1420 | 0.1300 | 0.1189 | 0.1085 |
| 48 | 0.3789 | 0.2604 | 0.2281 | 0.2045 | 0.1855 | 0.1693 | 0.1551 | 0.1423 | 0.1306 | 0.1197 | 0.1095 |
| 49 | 0.3770 | 0.2589 | 0.2271 | 0.2038 | 0.1851 | 0.1692 | 0.1553 | 0.1427 | 0.1312 | 0.1205 | 0.1105 |
| 50 | 0.3751 | 0.2574 | 0.2260 | 0.2032 | 0.1847 | 0.1691 | 0.1554 | 0.1430 | 0.1317 | 0.1212 | 0.1113 |

## Coeficientes $a_{in}$ para el contraste de Shapiro-Wilks

| n \ i | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 24 | 0.0107 | | | | | | | | | | |
| 25 | 0.0200 | 0.0000 | | | | | | | | | |
| 26 | 0.0284 | 0.0094 | | | | | | | | | |
| 27 | 0.0358 | 0.0178 | 0.0000 | | | | | | | | |
| 28 | 0.0424 | 0.0253 | 0.0084 | | | | | | | | |
| 29 | 0.0483 | 0.0320 | 0.0159 | 0.0000 | | | | | | | |
| 30 | 0.0537 | 0.0381 | 0.0227 | 0.0076 | | | | | | | |
| 31 | 0.0585 | 0.0435 | 0.0289 | 0.0144 | 0.0000 | | | | | | |
| 32 | 0.0629 | 0.0485 | 0.0344 | 0.0206 | 0.0068 | | | | | | |
| 33 | 0.0669 | 0.0530 | 0.0395 | 0.0262 | 0.0187 | 0.0000 | | | | | |
| 34 | 0.0706 | 0.0572 | 0.0441 | 0.0314 | 0.0187 | 0.0062 | | | | | |
| 35 | 0.0739 | 0.0610 | 0.0484 | 0.0361 | 0.0239 | 0.0119 | 0.0000 | | | | |
| 36 | 0.0770 | 0.0645 | 0.0523 | 0.0404 | 0.0287 | 0.0172 | 0.0057 | | | | |
| 37 | 0.0798 | 0.0677 | 0.0559 | 0.0444 | 0.0331 | 0.0220 | 0.0110 | 0.0000 | | | |
| 38 | 0.0824 | 0.0706 | 0.0592 | 0.0481 | 0.0372 | 0.0264 | 0.0158 | 0.0053 | | | |
| 39 | 0.0848 | 0.0733 | 0.0622 | 0.0515 | 0.0409 | 0.0305 | 0.0203 | 0.0101 | 0.0000 | | |
| 40 | 0.0870 | 0.0759 | 0.0651 | 0.0546 | 0.0444 | 0.0343 | 0.0244 | 0.0146 | 0.0049 | | |
| 41 | 0.0891 | 0.0782 | 0.0677 | 0.0575 | 0.0476 | 0.0379 | 0.0283 | 0.0188 | 0.0094 | 0.0000 | |
| 42 | 0.0909 | 0.0804 | 0.0701 | 0.0602 | 0.0506 | 0.0411 | 0.0318 | 0.0227 | 0.0136 | 0.0045 | |
| 43 | 0.0927 | 0.0824 | 0.0724 | 0.0628 | 0.0534 | 0.0442 | 0.0352 | 0.0263 | 0.0175 | 0.0087 | 0.0000 |
| 44 | 0.0943 | 0.0842 | 0.0745 | 0.0651 | 0.0560 | 0.0471 | 0.0383 | 0.0296 | 0.0211 | 0.0126 | 0.0042 |
| 45 | 0.0959 | 0.0860 | 0.0765 | 0.0673 | 0.0584 | 0.0497 | 0.0412 | 0.0328 | 0.0245 | 0.0163 | 0.0081 |
| 46 | 0.0972 | 0.0876 | 0.0783 | 0.0694 | 0.0607 | 0.0522 | 0.0439 | 0.0357 | 0.0277 | 0.0197 | 0.0118 |
| 47 | 0.0986 | 0.0892 | 0.0801 | 0.0713 | 0.0628 | 0.0546 | 0.0465 | 0.0385 | 0.0307 | 0.0229 | 0.0153 |
| 48 | 0.0998 | 0.0906 | 0.0817 | 0.0731 | 0.0648 | 0.0568 | 0.0489 | 0.0411 | 0.0335 | 0.0259 | 0.0185 |
| 49 | 0.1010 | 0.0919 | 0.0832 | 0.0748 | 0.0667 | 0.0588 | 0.0511 | 0.0436 | 0.0361 | 0.0288 | 0.0215 |
| 50 | 0.1020 | 0.0932 | 0.0846 | 0.0764 | 0.0685 | 0.0608 | 0.0532 | 0.0459 | 0.0386 | 0.0314 | 0.0244 |

| n \ i | 23 | 24 | 25 |
|---|---|---|---|
| 45 | 0.0000 | | |
| 46 | 0.0039 | | |
| 47 | 0.0076 | 0.0000 | |
| 48 | 0.0111 | 0.0037 | |
| 49 | 0.0143 | 0.0071 | 0.0000 |
| 50 | 0.0174 | 0.0104 | 0.0035 |

## Niveles de significación para el contraste de Shapiro-Wilks.

| n | 0.01 | 0.02 | 0.05 | 0.1 | 0.5 | 0.9 | 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 | 0.818 | 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 | 0.991 |
| 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 |

**Límites de significación para el test de Durbin-Watson usando un regresor.**

| | $\alpha = 0.01$ | $\alpha = 0.025$ | $\alpha = 0.05$ |
|---|---|---|---|
| n | $(d_l, d_u)$ | $(d_l, d_u)$ | $(d_l, d_u)$ |
| 15 | (0.813, 1.072) | (0.949, 1.222) | (1.077, 1.361) |
| 16 | (0.845, 1.088) | (0.980, 1.235) | (1.106, 1.371) |
| 17 | (0.876, 1.103) | (1.009, 1.249) | (1.133, 1.381) |
| 18 | (0.903, 1.118) | (1.036, 1.261) | (1.157, 1.391) |
| 19 | (0.929, 1.133) | (1.061, 1.274) | (1.181, 1.401) |
| 20 | (0.953, 1.148) | (1.083, 1.286) | (1.197, 1.410) |
| 21 | (0.976, 1.161) | (1.104, 1.298) | (1.221, 1.420) |
| 22 | (0.998, 1.174) | (1.124, 1.300) | (1.240, 1.429) |
| 23 | (1.018, 1.187) | (1.143, 1.319) | (1.257, 1.437) |
| 24 | (1.037, 1.199) | (1.161, 1.329) | (1.273, 1.446) |
| 25 | (1.056, 1.211) | (1.178, 1.340) | (1.288, 1.454) |
| 26 | (1.072, 1.222) | (1.193, 1.349) | (1.302, 1.461) |
| 27 | (1.089, 1.233) | (1.209, 1.358) | (1.316, 1.469) |
| 28 | (1.104, 1.244) | (1.223, 1.367) | (1.328, 1.476) |
| 29 | (1.119, 1.256) | (1.230, 1.375) | (1.341, 1.483) |
| 30 | (1.133, 1.263) | (1.249, 1.383) | (1.352, 1.489) |
| 31 | (1.147, 1.273) | (1.262, 1.391) | (1.363, 1.496) |
| 32 | (1.160, 1.282) | (1.272, 1.398) | (1.373, 1.502) |
| 33 | (1.172, 1.291) | (1.284, 1.406) | (1.384, 1.509) |
| 34 | (1.185, 1.299) | (1.294, 1.413) | (1.393, 1.514) |
| 35 | (1.195, 1.307) | (1.305, 1.420) | (1.402, 1.519) |
| 36 | (1.206, 1.315) | (1.314, 1.426) | (1.410, 1.524) |
| 37 | (1.216, 1.322) | (1.324, 1.433) | (1.419, 1.530) |
| 38 | (1.227, 1.330) | (1.333, 1.439) | (1.427, 1.535) |
| 39 | (1.237, 1.337) | (1.342, 1.445) | (1.435, 1.539) |
| 40 | (1.246, 1.344) | (1.350, 1.450) | (1.442, 1.544) |
| 45 | (1.288, 1.375) | (1.388, 1.477) | (1.475, 1.566) |
| 50 | (1.324, 1.403) | (1.420, 1.500) | (1.503, 1.585) |
| 55 | (1.356, 1.427) | (1.447, 1.520) | (1.528, 1.602) |
| 60 | (1.383, 1.448) | (1.471, 1.538) | (1.549, 1.616) |
| 65 | (1.407, 1.468) | (1.492, 1.554) | (1.567, 1.630) |
| 70 | (1.429, 1.485) | (1.511, 1.569) | (1.583, 1.641) |
| 75 | (1.448, 1.501) | (1.529, 1.582) | (1.598, 1.652) |
| 80 | (1.466, 1.515) | (1.544, 1.594) | (1.611, 1.662) |
| 85 | (1.482, 1.528) | (1.557, 1.604) | (1.624, 1.671) |
| 90 | (1.497, 1.540) | (1.570, 1.615) | (1.634, 1.680) |
| 95 | (1.510, 1.551) | (1.582, 1.624) | (1.645, 1.687) |
| 100 | (1.523, 1.562) | (1.593, 1.633) | (1.654, 1.695) |

## TABLAS DE LOS CINCO PRIMEROS POLINOMIOS ORTOGONALES (DATOS EQUIDISTANTES) $n = 3, \ldots, 19$.

$$\mathrm{P}_0(z) = 1 \quad ; \quad \mathrm{P}_1(z) = \lambda_1 z$$

$$\mathrm{P}_2(z) = \lambda_2 \left\{ z^2 - \frac{1}{12}(n^2 - 1) \right\}$$

$$\mathrm{P}_3(z) = \lambda_3 \left\{ z^3 - \frac{1}{20}(3n^2 - 7)z \right\}$$

$$\mathrm{P}_4(z) = \lambda_4 \left\{ z^4 - \frac{1}{14}(3n^2 - 13)z^2 + \frac{3}{560}(n^2 - 1)(n^2 - 9) \right\}$$

$$\mathrm{P}_5(z) = \lambda_5 \left\{ z^5 - \frac{5}{18}(n^2 - 7)z^3 + \frac{1}{1008}(15n^4 - 230n^2 + 407)z \right\}$$

$n = 3$

| | $P_1$ | $P_2$ |
|---|---|---|
| | 0 | $-2$ |
| | 1 | 1 |
| $A_{ii}$ | 2 | 6 |
| $\lambda_i$ | 1 | 3 |

$n = 4$

| | $P_1$ | $P_2$ | $P_3$ |
|---|---|---|---|
| | 1 | $-1$ | $-3$ |
| | 3 | 1 | 1 |
| $A_{ii}$ | 20 | 4 | 20 |
| $\lambda_i$ | 2 | 1 | $\frac{10}{3}$ |

$n = 5$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ |
|---|---|---|---|---|
| | 0 | $-2$ | 0 | 6 |
| | 1 | $-1$ | $-2$ | $-4$ |
| | 2 | 2 | 1 | 1 |
| $A_{ii}$ | 10 | 14 | 10 | 70 |
| $\lambda_i$ | 1 | 1 | $\frac{5}{6}$ | $\frac{35}{12}$ |

$n = 6$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | $-4$ | $-4$ | 2 | 10 |
| | 3 | $-1$ | $-7$ | $-3$ | $-5$ |
| | 5 | 5 | 5 | 1 | 1 |
| $A_{ii}$ | 70 | 84 | 180 | 28 | 252 |
| $\lambda_i$ | 2 | $\frac{3}{2}$ | $\frac{5}{3}$ | $\frac{7}{12}$ | $\frac{21}{10}$ |

$n = 7$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | $-4$ | 0 | 6 | 0 |
| | 1 | $-3$ | $-1$ | 1 | 5 |
| | 2 | 0 | $-1$ | $-7$ | $-4$ |
| | 3 | 5 | 1 | 3 | 1 |
| $A_{ii}$ | 28 | 84 | 6 | 154 | 84 |
| $\lambda_i$ | 1 | 1 | $\frac{1}{6}$ | $\frac{7}{12}$ | $\frac{7}{20}$ |

$n = 8$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | $-5$ | $-3$ | 9 | 15 |
| | 3 | $-3$ | $-7$ | $-3$ | 17 |
| | 5 | 1 | $-5$ | $-13$ | $-23$ |
| | 7 | 7 | 7 | 7 | 7 |
| $A_{ii}$ | 168 | 168 | 264 | 616 | 2184 |
| $\lambda_i$ | 2 | 1 | $\frac{2}{3}$ | $\frac{7}{12}$ | $\frac{7}{10}$ |

$n = 9$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | $-20$ | 0 | 18 | 0 |
| | 1 | $-17$ | $-9$ | 9 | 9 |
| | 2 | $-8$ | $-13$ | $-11$ | 4 |
| | 3 | 7 | $-7$ | $-21$ | $-11$ |
| | 4 | 28 | 14 | 14 | 4 |
| $A_{ii}$ | 60 | 2772 | 990 | 2002 | 468 |
| $\lambda_i$ | 1 | 3 | $\frac{5}{6}$ | $\frac{7}{12}$ | $\frac{3}{20}$ |

$n = 10$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | $-4$ | $-12$ | 18 | 6 |
| | 3 | $-3$ | $-31$ | 3 | 11 |
| | 5 | $-1$ | $-35$ | $-17$ | 1 |
| | 7 | 2 | $-14$ | $-22$ | $-14$ |
| | 9 | 6 | 42 | 18 | 6 |
| $A_{ii}$ | 330 | 132 | 8580 | 2860 | 780 |
| $\lambda_i$ | 2 | $\frac{1}{2}$ | $\frac{5}{3}$ | $\frac{5}{12}$ | $\frac{1}{10}$ |

$n = 11$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | $-10$ | 0 | 6 | 0 |
| | 1 | $-9$ | $-14$ | 4 | 4 |
| | 2 | $-6$ | $-23$ | $-1$ | 4 |
| | 3 | $-1$ | $-22$ | $-6$ | $-1$ |
| | 4 | 6 | $-6$ | $-6$ | $-6$ |
| | 5 | 15 | 30 | 6 | 3 |
| $A_{ii}$ | 110 | 858 | 4290 | 286 | 156 |
| $\lambda_i$ | 1 | 1 | $\frac{5}{6}$ | $\frac{1}{12}$ | $\frac{1}{40}$ |

$n = 12$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | $-35$ | $-7$ | 28 | 20 |
| | 3 | $-29$ | $-19$ | 12 | 44 |
| | 5 | $-17$ | $-25$ | $-13$ | 29 |
| | 7 | 1 | $-21$ | $-33$ | $-21$ |
| | 9 | 25 | $-3$ | $-27$ | $-57$ |
| | 11 | 55 | 33 | 33 | 33 |
| $A_{ii}$ | 572 | 12012 | 5148 | 8008 | 15912 |
| $\lambda_i$ | 2 | 3 | $\frac{2}{3}$ | $\frac{7}{24}$ | $\frac{3}{20}$ |

$n = 13$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | $-14$ | 0 | 84 | 0 |
| | 1 | $-13$ | $-4$ | 64 | 20 |
| | 2 | $-10$ | $-7$ | 11 | 26 |
| | 3 | $-5$ | $-8$ | $-54$ | 11 |
| | 4 | 2 | $-6$ | $-96$ | $-18$ |
| | 5 | 11 | 0 | $-66$ | $-33$ |
| | 6 | 22 | 11 | 99 | 22 |
| $A_{ii}$ | 182 | 2002 | 572 | 68068 | 6188 |
| $\lambda_i$ | 1 | 1 | $\frac{1}{6}$ | $\frac{7}{12}$ | $\frac{7}{120}$ |

$n = 14$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | −8 | −24 | 108 | 60 |
| | 3 | −7 | −67 | 63 | 145 |
| | 5 | −5 | −95 | −13 | 139 |
| | 7 | −2 | −98 | −92 | 28 |
| | 9 | 2 | −66 | −132 | −132 |
| | 11 | 7 | 11 | −77 | −187 |
| | 13 | 13 | 143 | 143 | 143 |
| $A_{ii}$ | 910 | 728 | 97240 | 136136 | 235144 |
| $\lambda_i$ | 2 | $\frac{1}{2}$ | $\frac{5}{3}$ | $\frac{7}{12}$ | $\frac{7}{30}$ |

$n = 15$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | −56 | 0 | 756 | 0 |
| | 1 | −53 | −27 | 621 | 675 |
| | 2 | −44 | −49 | 251 | 1000 |
| | 3 | −29 | −61 | −249 | 751 |
| | 4 | −8 | −58 | −704 | −44 |
| | 5 | 19 | −35 | −869 | −979 |
| | 6 | 52 | 13 | −429 | −1144 |
| | 7 | 91 | 91 | 1001 | 1001 |
| $A_{ii}$ | 280 | 37128 | 39780 | 6466460 | 10581480 |
| $\lambda_i$ | 1 | 3 | $\frac{5}{6}$ | $\frac{35}{12}$ | $\frac{21}{20}$ |

$n = 16$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 1 | −21 | −63 | 189 | 45 |
| | 3 | −19 | −179 | 129 | 115 |
| | 5 | −15 | −265 | 23 | 131 |
| | 7 | −9 | −301 | −101 | 77 |
| | 9 | −1 | −267 | −201 | −33 |
| | 11 | 9 | −143 | −221 | −143 |
| | 13 | 21 | 91 | −91 | −143 |
| | 15 | 35 | 455 | 273 | 143 |
| $A_{ii}$ | 1360 | 5712 | 1007760 | 470288 | 201552 |
| $\lambda_i$ | 2 | 1 | $\frac{10}{3}$ | $\frac{7}{12}$ | $\frac{1}{10}$ |

$n = 17$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | −24 | 0 | 36 | 0 |
| | 1 | −23 | −7 | 31 | 55 |
| | 2 | −20 | −13 | 17 | 88 |
| | 3 | −15 | −17 | −3 | 83 |
| | 4 | −8 | −18 | −24 | 36 |
| | 5 | 1 | −15 | −39 | −39 |
| | 6 | 12 | −7 | −39 | −104 |
| | 7 | 25 | 7 | −13 | −91 |
| | 8 | 40 | 28 | 52 | 104 |
| $A_{ii}$ | 408 | 7752 | 3876 | 16796 | 100776 |
| $\lambda_i$ | 1 | 1 | $\frac{1}{6}$ | $\frac{1}{12}$ | $\frac{1}{20}$ |

$n = 18$

| $z_i$ | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| 1 | 1 | −40 | −8 | 44 | 220 |
| 3 | 3 | −37 | −23 | 33 | 583 |
| 5 | 5 | −31 | −35 | 13 | 733 |
| 7 | 7 | −22 | −42 | −12 | 588 |
| 9 | 9 | −10 | −42 | −36 | 156 |
| 11 | 11 | 5 | −33 | −51 | −429 |
| 13 | 13 | 23 | −13 | −47 | −871 |
| 15 | 15 | 44 | 20 | −12 | −676 |
| 17 | 17 | 68 | 68 | 68 | 884 |
| $A_{ii}$ | 1938 | 23256 | 23256 | 28424 | 6953544 |
| $\lambda_i$ | 2 | $\frac{3}{2}$ | $\frac{1}{3}$ | $\frac{1}{12}$ | $\frac{3}{10}$ |

$n = 19$

| | $P_1$ | $P_2$ | $P_3$ | $P_4$ | $P_5$ |
|---|---|---|---|---|---|
| | 0 | −30 | 0 | 396 | 0 |
| | 1 | −29 | −44 | 352 | 44 |
| | 2 | −26 | −83 | 227 | 74 |
| | 3 | −21 | −112 | 42 | 79 |
| | 4 | −14 | −126 | −168 | 54 |
| | 5 | −5 | −120 | −354 | 3 |
| | 6 | 6 | −89 | −453 | −58 |
| | 7 | 19 | −28 | −388 | −98 |
| | 8 | 34 | 68 | −68 | −68 |
| | 9 | 51 | 204 | 612 | 102 |
| $A_{ii}$ | 570 | 13566 | 213180 | 2288132 | 89148 |
| $\lambda_i$ | 1 | 1 | $\frac{5}{6}$ | $\frac{7}{12}$ | $\frac{1}{40}$ |