Tablica 3. Wartości krytyczne $\chi^2(\alpha; n)$ w rozkładzie chi-kwadrat

| n \ α | 0,995 | 0,990 | 0,975 | 0,950 | 0,900 | 0,100 | 0,050 | 0,025 | 0,010 | 0,005 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $0,0^4393$ | $0,0^3157$ | $0,0^3982$ | $0,0^2393$ | 0,016 | 2,706 | 3,841 | 5,024 | 6,635 | 7,879 |
| 2 | 0,010 | 0,020 | 0,051 | 0,103 | 0,211 | 4,605 | 5,991 | 7,378 | 9,210 | 10,60 |
| 3 | 0,072 | 0,115 | 0,216 | 0,352 | 0,584 | 6,251 | 7,815 | 9,348 | 11,34 | 12,84 |
| 4 | 0,207 | 0,297 | 0,484 | 0,711 | 1,064 | 7,779 | 9,488 | 11,14 | 13,28 | 14,86 |
| 5 | 0,412 | 0,554 | 0,831 | 1,145 | 1,610 | 9,236 | 11,07 | 12,83 | 15,09 | 16,75 |
| 6 | 0,676 | 0,872 | 1,237 | 1,635 | 2,204 | 10,64 | 12,59 | 14,45 | 16,81 | 18,55 |
| 7 | 0,989 | 1,239 | 1,690 | 2,167 | 2,833 | 12,02 | 14,07 | 16,01 | 18,48 | 20,28 |
| 8 | 1,344 | 1,646 | 2,180 | 2,733 | 3,490 | 13,36 | 15,51 | 17,53 | 20,09 | 21,95 |
| 9 | 1,735 | 2,088 | 2,700 | 3,325 | 4,168 | 14,68 | 16,92 | 19,02 | 21,67 | 23,59 |
| 10 | 2,156 | 2,558 | 3,247 | 3,940 | 4,865 | 15,99 | 18,31 | 20,48 | 23,21 | 25,19 |
| 11 | 2,603 | 3,053 | 3,816 | 4,575 | 5,578 | 17,28 | 19,68 | 21,92 | 24,72 | 26,76 |
| 12 | 3,074 | 3,571 | 4,404 | 5,226 | 6,304 | 18,55 | 21,03 | 23,34 | 26,22 | 28,30 |
| 13 | 3,565 | 4,107 | 5,009 | 5,892 | 7,042 | 19,81 | 22,36 | 24,74 | 27,69 | 29,82 |
| 14 | 4,075 | 4,660 | 5,629 | 6,571 | 7,790 | 21,06 | 23,68 | 26,12 | 29,14 | 31,32 |
| 15 | 4,601 | 5,229 | 6,262 | 7,261 | 8,547 | 22,31 | 25,00 | 27,49 | 30,58 | 32,80 |
| 16 | 5,142 | 5,812 | 6,908 | 7,962 | 9,312 | 23,54 | 26,30 | 28,85 | 32,00 | 34,27 |
| 17 | 5,697 | 6,408 | 7,564 | 8,672 | 10,09 | 24,77 | 27,59 | 30,19 | 33,41 | 35,72 |
| 18 | 6,265 | 7,015 | 8,231 | 9,390 | 10,86 | 25,99 | 28,87 | 31,53 | 34,81 | 37,16 |
| 19 | 6,844 | 7,633 | 8,907 | 10,12 | 11,65 | 27,20 | 30,14 | 32,85 | 36,19 | 38,58 |
| 20 | 7,434 | 8,260 | 9,591 | 10,85 | 12,44 | 28,41 | 31,41 | 34,17 | 37,57 | 40,00 |
| 21 | 8,034 | 8,897 | 10,28 | 11,59 | 13,24 | 29,62 | 32,67 | 35,48 | 38,93 | 41,40 |
| 22 | 8,643 | 9,542 | 10,98 | 12,34 | 14,04 | 30,81 | 33,92 | 36,78 | 40,29 | 42,80 |
| 23 | 9,260 | 10,20 | 11,69 | 13,09 | 14,85 | 32,01 | 35,17 | 38,08 | 41,64 | 44,18 |
| 24 | 9,886 | 10,86 | 12,40 | 13,85 | 15,66 | 33,20 | 36,42 | 39,36 | 42,98 | 45,56 |
| 25 | 10,52 | 11,52 | 13,12 | 14,61 | 16,47 | 34,38 | 37,65 | 40,65 | 44,31 | 46,93 |
| 26 | 11,16 | 12,20 | 13,84 | 15,38 | 17,29 | 35,56 | 38,89 | 41,92 | 45,64 | 48,29 |
| 27 | 11,81 | 12,88 | 14,57 | 16,15 | 18,11 | 36,74 | 40,11 | 43,19 | 46,96 | 49,64 |
| 28 | 12,46 | 13,56 | 15,31 | 16,93 | 18,94 | 37,92 | 41,34 | 44,46 | 48,28 | 50,99 |
| 29 | 13,12 | 14,26 | 16,05 | 17,71 | 19,77 | 39,09 | 42,56 | 45,72 | 49,59 | 52,34 |
| 30 | 13,79 | 14,95 | 16,79 | 18,49 | 20,60 | 40,26 | 43,77 | 46,98 | 50,89 | 53,67 |
| 35 | 17,19 | 18,51 | 20,57 | 22,47 | 24,80 | 46,06 | 49,80 | 53,20 | 57,34 | 60,27 |
| 40 | 20,71 | 22,16 | 24,43 | 26,51 | 29,05 | 51,81 | 55,76 | 59,34 | 63,69 | 66,77 |
| 45 | 24,31 | 25,90 | 28,37 | 30,61 | 33,35 | 57,51 | 61,66 | 65,41 | 69,96 | 73,17 |
| 50 | 27,99 | 29,71 | 32,36 | 34,76 | 37,69 | 63,17 | 67,50 | 71,42 | 76,15 | 79,49 |
| 55 | 31,73 | 33,57 | 36,40 | 38,96 | 42,06 | 68,80 | 73,31 | 77,38 | 82,29 | 85,75 |
| 60 | 35,53 | 37,48 | 40,48 | 43,19 | 46,46 | 74,40 | 79,08 | 83,30 | 88,38 | 91,95 |
| 70 | 43,28 | 45,44 | 48,76 | 51,74 | 55,33 | 85,53 | 90,53 | 95,02 | 100,4 | 104,2 |
| 80 | 51,17 | 53,54 | 57,15 | 60,39 | 64,28 | 96,58 | 101,9 | 106,6 | 112,3 | 116,3 |
| 90 | 59,20 | 61,75 | 65,65 | 69,13 | 73,29 | 107,6 | 113,1 | 118,1 | 124,1 | 128,3 |
| 100 | 67,33 | 70,06 | 74,22 | 77,93 | 82,36 | 118,5 | 124,3 | 129,6 | 135,8 | 140,2 |

Tablica 4. Wartości krytyczne $t(\alpha; n)$ w rozkładzie $t$ - Studenta

| n \ α | 0,200 | 0,100 | 0,050 | 0,025 | 0,020 | 0,010 | 0,005 |
|---|---|---|---|---|---|---|---|
| 1 | 3,078 | 6,314 | 12,71 | 25,45 | 31,82 | 63,66 | 127,3 |
| 2 | 1,886 | 2,920 | 4,303 | 6,205 | 6,965 | 9,925 | 14,09 |
| 3 | 1,638 | 2,353 | 3,182 | 4,177 | 4,541 | 5,841 | 7,453 |
| 4 | 1,533 | 2,132 | 2,776 | 3,495 | 3,747 | 4,604 | 5,598 |
| 5 | 1,476 | 2,015 | 2,571 | 3,163 | 3,365 | 4,032 | 4,773 |
| 6 | 1,440 | 1,943 | 2,447 | 2,969 | 3,143 | 3,707 | 4,317 |
| 7 | 1,415 | 1,895 | 2,365 | 2,841 | 2,998 | 3,499 | 4,029 |
| 8 | 1,397 | 1,860 | 2,306 | 2,752 | 2,896 | 3,355 | 3,833 |
| 9 | 1,383 | 1,833 | 2,262 | 2,685 | 2,821 | 3,250 | 3,690 |
| 10 | 1,372 | 1,812 | 2,228 | 2,634 | 2,764 | 3,169 | 3,581 |
| 11 | 1,363 | 1,796 | 2,201 | 2,593 | 2,718 | 3,106 | 3,497 |
| 12 | 1,356 | 1,782 | 2,179 | 2,560 | 2,681 | 3,055 | 3,428 |
| 13 | 1,350 | 1,771 | 2,160 | 2,533 | 2,650 | 3,012 | 3,372 |
| 14 | 1,345 | 1,761 | 2,145 | 2,510 | 2,624 | 2,977 | 3,326 |
| 15 | 1,341 | 1,753 | 2,131 | 2,490 | 2,602 | 2,947 | 3,286 |
| 16 | 1,337 | 1,746 | 2,120 | 2,473 | 2,583 | 2,921 | 3,252 |
| 17 | 1,333 | 1,740 | 2,110 | 2,458 | 2,567 | 2,898 | 3,222 |
| 18 | 1,330 | 1,734 | 2,101 | 2,445 | 2,552 | 2,878 | 3,197 |
| 19 | 1,328 | 1,729 | 2,093 | 2,433 | 2,539 | 2,861 | 3,174 |
| 20 | 1,325 | 1,725 | 2,086 | 2,423 | 2,528 | 2,845 | 3,153 |
| 21 | 1,323 | 1,721 | 2,080 | 2,414 | 2,518 | 2,831 | 3,135 |
| 22 | 1,321 | 1,717 | 2,074 | 2,405 | 2,508 | 2,819 | 3,119 |
| 23 | 1,319 | 1,714 | 2,069 | 2,398 | 2,500 | 2,807 | 3,104 |
| 24 | 1,318 | 1,711 | 2,064 | 2,391 | 2,492 | 2,797 | 3,091 |
| 25 | 1,316 | 1,708 | 2,060 | 2,385 | 2,485 | 2,787 | 3,078 |
| 26 | 1,315 | 1,706 | 2,056 | 2,379 | 2,479 | 2,779 | 3,067 |
| 27 | 1,314 | 1,703 | 2,052 | 2,373 | 2,473 | 2,771 | 3,057 |
| 28 | 1,313 | 1,701 | 2,048 | 2,368 | 2,467 | 2,763 | 3,047 |
| 29 | 1,311 | 1,699 | 2,045 | 2,364 | 2,462 | 2,756 | 3,038 |
| 30 | 1,310 | 1,697 | 2,042 | 2,360 | 2,457 | 2,750 | 3,030 |
| 35 | 1,306 | 1,690 | 2,030 | 2,342 | 2,438 | 2,724 | 2,996 |
| 40 | 1,303 | 1,684 | 2,021 | 2,329 | 2,423 | 2,704 | 2,971 |
| 45 | 1,301 | 1,679 | 2,014 | 2,319 | 2,412 | 2,690 | 2,952 |
| 50 | 1,299 | 1,676 | 2,009 | 2,311 | 2,403 | 2,678 | 2,937 |
| 60 | 1,296 | 1,671 | 2,000 | 2,299 | 2,390 | 2,660 | 2,915 |
| 70 | 1,294 | 1,667 | 1,994 | 2,291 | 2,381 | 2,648 | 2,899 |
| 80 | 1,292 | 1,664 | 1,990 | 2,284 | 2,374 | 2,639 | 2,887 |
| 90 | 1,291 | 1,662 | 1,987 | 2,280 | 2,368 | 2,632 | 2,878 |
| 100 | 1,290 | 1,660 | 1,984 | 2,276 | 2,364 | 2,626 | 2,871 |
| ∞ | 1,282 | 1,645 | 1,960 | 2,241 | 2,326 | 2,576 | 2,807 |

Tablica 5. Wartości krytyczne $\frac{F(0,05;n;m)}{F(0,01;n;m)}$ w rozkładzie $F$ – Snedecora

| m \ n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 15 | 20 | 24 | 30 | 40 | 60 | 120 | ∞ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 161,4 | 199,5 | 215,7 | 224,6 | 230,2 | 234,0 | 236,8 | 238,9 | 240,5 | 241,9 | 243,9 | 245,9 | 248,0 | 249,1 | 250,1 | 251,1 | 252,2 | 253,3 | 254,3 |
| | 4052 | 4999 | 5404 | 5624 | 5764 | 5859 | 5928 | 5981 | 6022 | 6056 | 6107 | 6157 | 6209 | 6234 | 6260 | 6286 | 6313 | 6340 | 6366 |
| 2 | 18,51 | 19,00 | 19,16 | 19,25 | 19,30 | 19,33 | 19,35 | 19,37 | 19,38 | 19,40 | 19,41 | 19,43 | 19,45 | 19,45 | 19,46 | 19,47 | 19,48 | 19,49 | 19,50 |
| | 98,50 | 99,00 | 99,16 | 99,25 | 99,30 | 99,33 | 99,36 | 99,38 | 99,39 | 99,40 | 99,42 | 99,43 | 99,45 | 99,46 | 99,47 | 99,48 | 99,48 | 99,49 | 99,50 |
| 3 | 10,13 | 9,552 | 9,277 | 9,117 | 9,013 | 8,941 | 8,887 | 8,845 | 8,812 | 8,785 | 8,745 | 8,703 | 8,660 | 8,638 | 8,617 | 8,594 | 8,572 | 8,549 | 8,526 |
| | 34,12 | 30,82 | 29,46 | 28,71 | 28,24 | 27,91 | 27,67 | 27,49 | 27,34 | 27,23 | 27,05 | 26,87 | 26,69 | 26,60 | 26,50 | 26,41 | 26,32 | 26,22 | 26,13 |
| 4 | 7,709 | 6,944 | 6,591 | 6,388 | 6,256 | 6,163 | 6,094 | 6,041 | 5,999 | 5,964 | 5,912 | 5,858 | 5,803 | 5,774 | 5,746 | 5,717 | 5,688 | 5,658 | 5,628 |
| | 21,20 | 18,00 | 16,69 | 15,98 | 15,52 | 15,21 | 14,98 | 14,80 | 14,66 | 14,55 | 14,37 | 14,20 | 14,02 | 13,93 | 13,84 | 13,75 | 13,65 | 13,56 | 13,46 |
| 5 | 6,608 | 5,786 | 5,409 | 5,192 | 5,050 | 4,950 | 4,876 | 4,818 | 4,772 | 4,735 | 4,678 | 4,619 | 4,558 | 4,527 | 4,496 | 4,464 | 4,431 | 4,398 | 4,365 |
| | 16,26 | 13,27 | 12,06 | 11,39 | 10,97 | 10,67 | 10,46 | 10,29 | 10,16 | 10,05 | 9,888 | 9,722 | 9,553 | 9,466 | 9,379 | 9,291 | 9,202 | 9,112 | 9,020 |
| 6 | 5,987 | 5,143 | 4,757 | 4,534 | 4,387 | 4,284 | 4,207 | 4,147 | 4,099 | 4,060 | 4,000 | 3,938 | 3,874 | 3,841 | 3,808 | 3,774 | 3,740 | 3,705 | 3,669 |
| | 13,75 | 10,92 | 9,780 | 9,148 | 8,746 | 8,466 | 8,260 | 8,102 | 7,976 | 7,874 | 7,718 | 7,559 | 7,396 | 7,313 | 7,229 | 7,143 | 7,057 | 6,969 | 6,880 |
| 7 | 5,591 | 4,737 | 4,347 | 4,120 | 3,972 | 3,866 | 3,787 | 3,726 | 3,677 | 3,637 | 3,575 | 3,511 | 3,445 | 3,410 | 3,376 | 3,340 | 3,304 | 3,267 | 3,230 |
| | 12,25 | 9,547 | 8,451 | 7,847 | 7,460 | 7,191 | 6,993 | 6,840 | 6,719 | 6,620 | 6,469 | 6,314 | 6,155 | 6,074 | 5,992 | 5,908 | 5,824 | 5,737 | 5,650 |
| 8 | 5,318 | 4,459 | 4,066 | 3,838 | 3,688 | 3,581 | 3,500 | 3,438 | 3,388 | 3,347 | 3,284 | 3,218 | 3,150 | 3,115 | 3,079 | 3,043 | 3,005 | 2,967 | 2,928 |
| | 11,26 | 8,649 | 7,591 | 7,006 | 6,632 | 6,371 | 6,178 | 6,029 | 5,911 | 5,814 | 5,667 | 5,515 | 5,359 | 5,279 | 5,198 | 5,116 | 5,032 | 4,946 | 4,859 |
| 9 | 5,117 | 4,256 | 3,863 | 3,633 | 3,482 | 3,374 | 3,293 | 3,230 | 3,179 | 3,137 | 3,073 | 3,006 | 2,936 | 2,900 | 2,864 | 2,826 | 2,787 | 2,748 | 2,707 |
| | 10,56 | 8,022 | 6,992 | 6,422 | 6,057 | 5,802 | 5,613 | 5,467 | 5,351 | 5,257 | 5,111 | 4,962 | 4,808 | 4,729 | 4,649 | 4,567 | 4,483 | 4,398 | 4,311 |
| 10 | 4,965 | 4,103 | 3,708 | 3,478 | 3,326 | 3,217 | 3,135 | 3,072 | 3,020 | 2,978 | 2,913 | 2,845 | 2,774 | 2,737 | 2,700 | 2,661 | 2,621 | 2,580 | 2,538 |
| | 10,04 | 7,559 | 6,552 | 5,994 | 5,636 | 5,386 | 5,200 | 5,057 | 4,942 | 4,849 | 4,706 | 4,558 | 4,405 | 4,327 | 4,247 | 4,165 | 4,082 | 3,996 | 3,909 |
| 12 | 4,747 | 3,885 | 3,490 | 3,259 | 3,106 | 2,996 | 2,913 | 2,849 | 2,796 | 2,753 | 2,687 | 2,617 | 2,544 | 2,505 | 2,466 | 2,426 | 2,384 | 2,341 | 2,296 |
| | 9,330 | 6,927 | 5,953 | 5,412 | 5,064 | 4,821 | 4,640 | 4,499 | 4,388 | 4,296 | 4,155 | 4,010 | 3,858 | 3,780 | 3,701 | 3,619 | 3,535 | 3,449 | 3,361 |
| 15 | 4,543 | 3,682 | 3,287 | 3,056 | 2,901 | 2,790 | 2,707 | 2,641 | 2,588 | 2,544 | 2,475 | 2,403 | 2,328 | 2,288 | 2,247 | 2,204 | 2,160 | 2,114 | 2,066 |
| | 8,683 | 6,359 | 5,417 | 4,893 | 4,556 | 4,318 | 4,142 | 4,004 | 3,895 | 3,805 | 3,666 | 3,522 | 3,372 | 3,294 | 3,214 | 3,132 | 3,047 | 2,959 | 2,868 |
| 20 | 4,351 | 3,493 | 3,098 | 2,866 | 2,711 | 2,599 | 2,514 | 2,447 | 2,393 | 2,348 | 2,278 | 2,203 | 2,124 | 2,082 | 2,039 | 1,994 | 1,946 | 1,896 | 1,843 |
| | 8,096 | 5,849 | 4,938 | 4,431 | 4,103 | 3,871 | 3,699 | 3,564 | 3,457 | 3,368 | 3,231 | 3,088 | 2,938 | 2,859 | 2,778 | 2,695 | 2,608 | 2,517 | 2,421 |
| 24 | 4,260 | 3,403 | 3,009 | 2,776 | 2,621 | 2,508 | 2,423 | 2,355 | 2,300 | 2,255 | 2,183 | 2,108 | 2,027 | 1,984 | 1,939 | 1,892 | 1,842 | 1,790 | 1,733 |
| | 7,823 | 5,614 | 4,718 | 4,218 | 3,895 | 3,667 | 3,496 | 3,363 | 3,256 | 3,168 | 3,032 | 2,889 | 2,738 | 2,659 | 2,577 | 2,492 | 2,403 | 2,310 | 2,211 |
| 30 | 4,171 | 3,316 | 2,922 | 2,690 | 2,534 | 2,421 | 2,334 | 2,266 | 2,211 | 2,165 | 2,092 | 2,015 | 1,932 | 1,887 | 1,841 | 1,792 | 1,740 | 1,683 | 1,622 |
| | 7,562 | 5,390 | 4,510 | 4,018 | 3,699 | 3,473 | 3,305 | 3,173 | 3,067 | 2,979 | 2,843 | 2,700 | 2,549 | 2,469 | 2,386 | 2,299 | 2,208 | 2,111 | 2,006 |
| 40 | 4,085 | 3,232 | 2,839 | 2,606 | 2,449 | 2,336 | 2,249 | 2,180 | 2,124 | 2,077 | 2,003 | 1,924 | 1,839 | 1,793 | 1,744 | 1,693 | 1,637 | 1,577 | 1,509 |
| | 7,314 | 5,178 | 4,313 | 3,828 | 3,514 | 3,291 | 3,124 | 2,993 | 2,888 | 2,801 | 2,665 | 2,522 | 2,369 | 2,288 | 2,203 | 2,114 | 2,019 | 1,917 | 1,805 |
| 60 | 4,001 | 3,150 | 2,758 | 2,525 | 2,368 | 2,254 | 2,167 | 2,097 | 2,040 | 1,993 | 1,917 | 1,836 | 1,748 | 1,700 | 1,649 | 1,594 | 1,534 | 1,467 | 1,389 |
| | 7,077 | 4,977 | 4,126 | 3,649 | 3,339 | 3,119 | 2,953 | 2,823 | 2,718 | 2,632 | 2,496 | 2,352 | 2,198 | 2,115 | 2,028 | 1,936 | 1,836 | 1,726 | 1,601 |
| 120 | 3,920 | 3,072 | 2,680 | 2,447 | 2,290 | 2,175 | 2,087 | 2,016 | 1,959 | 1,910 | 1,834 | 1,750 | 1,659 | 1,608 | 1,554 | 1,495 | 1,429 | 1,352 | 1,254 |
| | 6,851 | 4,787 | 3,949 | 3,480 | 3,174 | 2,956 | 2,792 | 2,663 | 2,559 | 2,472 | 2,336 | 2,191 | 2,035 | 1,950 | 1,860 | 1,763 | 1,656 | 1,533 | 1,381 |
| ∞ | 3,841 | 2,996 | 2,605 | 2,372 | 2,214 | 2,099 | 2,010 | 1,938 | 1,880 | 1,831 | 1,752 | 1,666 | 1,571 | 1,517 | 1,459 | 1,394 | 1,318 | 1,221 | 1,000 |
| | 6,635 | 4,605 | 3,782 | 3,319 | 3,017 | 2,802 | 2,639 | 2,511 | 2,407 | 2,321 | 2,185 | 2,039 | 1,878 | 1,791 | 1,696 | 1,592 | 1,473 | 1,325 | 1,000 |