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7 Nachschüssige Endwertfaktoren

a) Problemlage:

Man zahlt während n Zeiteinheiten am Schluss jeder Zeiteinheit (zum Beispiel Jahre) einen Betrag von d Franken.
Welchen Betrag S erhält man, nachdem diese n Zeiteinheiten verflossen sind? Wir nehmen wieder an, dass die Zinsen am Ende jeder Zeiteinheit (zum Beispiel des Jahres) verrechnet werden.

Bezeichnungen:

S = Endwert (Endkapital)
d = periodische Zahlung
n = Anzahl Zeiteinheiten
p = Zinsfuss ($i = 0{,}01\ p$)

Gegeben: d; n; p (%) bzw. i
Gesucht: S

b) Lösung des Problems:

$$S = d \left\{ \frac{(1+i)^n - 1}{i} \right\} = d \cdot s_{\overline{n}|} \tag{12}$$

Für die Bestimmung von d ist analog zu den früher gemachten Bemerkungen der Reziprokwert von $s_{\overline{n}|}$ einzusetzen, also

$$d = S \left\{ \frac{i}{(1+i)^n - 1} \right\} = S \frac{1}{s_{\overline{n}|}} \tag{13}$$

Der Wert $\frac{1}{s_{\overline{n}|}}$ kann aus Tabelle 7 errechnet werden, bzw. es besteht folgende Relation:

$$\frac{i}{(1+i)^n - 1} = \frac{i\,(1+i)^n}{(1+i)^n - 1} - i, \text{ das heisst } \frac{1}{s_{\overline{n}|}} = \frac{1}{a_{\overline{n}|}} - i,$$

das heisst die um i verringerten Werte der Kapitalwiedergewinnungsfaktoren gemäss Tabelle 4 ergeben die Reziprokwerte der nachschüssigen Endwertfaktoren.

c) Beispiel:

Bestimmung des Endwertes (S unbekannt):
d = Fr. 1000; p = 5%, das heisst i = 0,05
n = 10 Jahre

Aus Tabelle 7 erhalten wir:

$$s_{\overline{n}|} = \frac{(1+i)^n - 1}{i} = 12{,}577\,893$$

$$\mathbf{S = d \cdot s_{\overline{n}|} = 1000 \cdot 12{,}577\,893 = Fr.\ 12\,577.89}$$

Bestimmung der periodischen Zahlung (d unbekannt):
S = Fr. 10 000; p = 4½%, das heisst i = 0,045; n = 5 Jahre
Aus Tabelle 7 für p = 4½% und n = 5 erhalten wir

$$s_{\overline{n}|} = 5{,}470\,710 \text{ und } \frac{1}{s_{\overline{n}|}} = 0{,}1828.$$

Somit ist $d = S \frac{1}{s_{\overline{n}|}} = 10\,000 \cdot 0{,}1828$

Die periodisch (während 5 Jahren) zu leistende Zahlung beträgt Fr. 1828.

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 2%	p = 2½%	p = 3%	p = 3¼%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,020 000 000	2,025 000 000	2,030 000 000	2,032 500 000	2
3	3,060 400 000	3,075 625 000	3,090 900 000	3,098 556 250	3
4	4,121 608 000	4,152 515 625	4,183 627 000	4,199 259 328	4
5	5,204 040 160	5,256 328 516	5,309 135 810	5,335 735 256	5
6	6,308 120 963	6,387 736 729	6,468 409 884	6,509 146 652	6
7	7,434 283 382	7,547 430 147	7,662 462 181	7,720 693 918	7
8	8,582 969 050	8,736 115 900	8,892 336 046	8,971 616 471	8
9	9,754 628 431	9,954 518 798	10,159 106 128	10,263 194 006	9
10	10,949 721 000	11,203 381 768	11,463 879 311	11,596 747 811	10
11	12,168 715 420	12,483 466 312	12,807 795 691	12,973 642 115	11
12	13,412 089 728	13,795 552 970	14,192 029 562	14,395 285 484	12
13	14,680 331 523	15,140 441 794	15,617 790 448	15,863 132 262	13
14	15,973 938 153	16,518 952 839	17,086 324 162	17,378 684 060	14
15	17,293 416 916	17,931 926 660	18,598 913 887	18,943 491 292	15
16	18,639 285 255	19,380 224 826	20,156 881 303	20,559 154 759	16
17	20,012 070 960	20,864 730 447	21,761 587 742	22,227 327 289	17
18	21,412 312 379	22,386 348 708	23,414 435 375	23,949 715 426	18
19	22,840 558 626	23,946 007 426	25,116 868 436	25,728 081 177	19
20	24,297 369 799	25,544 657 612	26,870 374 489	27,564 243 816	20
21	25,783 317 195	27,183 274 052	28,676 485 724	29,460 081 740	21
22	27,298 983 539	28,862 855 903	30,536 780 295	31,417 534 396	22
23	28,844 963 210	30,584 427 301	32,452 883 704	33,438 604 264	23
24	30,421 862 474	32,349 037 983	34,426 470 215	35,525 358 903	24
25	32,030 299 723	34,157 763 933	36,459 264 322	37,679 933 067	25
26	33,670 905 718	36,011 708 031	38,553 042 251	39,904 530 892	26
27	35,344 323 832	37,912 000 732	40,709 633 519	42,201 428 146	27
28	37,051 210 309	39,859 800 750	42,930 922 525	44,572 974 560	28
29	38,792 234 515	41,856 295 769	45,218 850 200	47,021 596 234	29
30	40,568 079 205	43,902 703 163	47,575 415 706	49,549 798 111	30
35	49,994 477 633	54,928 207 443	60,462 081 812	63,478 033 021	35
40	60,401 983 181	67,402 553 536	75,401 259 733	79,821 582 588	40
45	71,892 710 265	81,516 131 156	92,719 861 388	98,999 289 898	45
50	84,579 401 454	97,484 348 788	112,796 867 290	121,502 630 202	50
60	114,051 539 418	135,991 589 953	163,053 436 802	178,893 027 240	60
70	149,977 911 142	185,284 114 207	230,594 063 737	257,913 538 019	70
80	193,771 957 805	248,382 712 649	321,363 018 548	366,716 429 198	80
90	247,156 656 315	329,154 253 276	443,348 903 653	516,526 510 307	90
100	312,232 305 913	432,548 654 042	607,287 732 695	722,799 157 647	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 3½%	p = 3¾%	p = 4%	p = 4¼%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,035 000 000	2,037 500 000	2,040 000 000	2,042 500 000	2
3	3,106 225 000	3,113 906 250	3,121 600 000	3,129 306 250	3
4	4,214 942 875	4,230 677 734	4,246 464 000	4,262 301 766	4
5	5,362 465 876	5,389 328 149	5,416 322 560	5,443 449 591	5
6	6,550 152 181	6,591 427 955	6,632 975 462	6,674 796 198	6
7	7,779 407 508	7,838 606 503	7,898 294 481	7,958 475 037	7
8	9,051 686 770	9,132 554 247	9,214 226 260	9,296 710 226	8
9	10,368 495 807	10,475 025 031	10,582 795 311	10,691 820 410	9
10	11,731 393 161	11,867 838 470	12,006 107 123	12,146 222 778	10
11	13,141 991 921	13,312 882 413	13,486 351 408	13,662 437 246	11
12	14,601 961 638	14,812 115 503	15,025 805 464	15,243 090 829	12
13	16,113 030 296	16,367 569 835	16,626 837 683	16,890 922 189	13
14	17,676 986 356	17,981 353 703	18,291 911 190	18,608 786 382	14
15	19,295 680 879	19,655 654 467	20,023 587 638	20,399 659 803	15
16	20,971 029 709	21,392 741 510	21,824 531 143	22,266 645 345	16
17	22,705 015 749	23,194 969 316	23,697 512 389	24,212 977 772	17
18	24,499 691 300	25,064 780 666	25,645 412 884	26,242 029 327	18
19	26,357 180 496	27,004 709 941	27,671 229 400	28,357 315 574	19
20	28,279 681 813	29,017 386 564	29,778 078 576	30,562 501 486	20
21	30,269 470 677	31,105 538 560	31,969 201 719	32,861 407 799	21
22	32,328 902 150	33,271 996 256	34,247 969 788	35,258 017 630	22
23	34,460 413 726	35,519 696 115	36,617 888 579	37,756 483 380	23
24	36,666 528 206	37,851 684 720	39,082 604 122	40,361 133 923	24
25	38,949 856 693	40,271 122 897	41,645 908 287	43,076 482 115	25
26	41,313 101 678	42,781 290 005	44,311 744 619	45,907 232 605	26
27	43,759 060 236	45,385 588 380	47,084 214 403	48,858 289 991	27
28	46,290 627 345	48,087 547 945	49,967 582 980	51,934 767 315	28
29	48,910 799 302	50,890 830 993	52,966 286 299	55,141 994 926	29
30	51,622 677 277	53,799 237 155	56,084 937 751	58,485 529 710	30
35	66,674 012 739	70,061 380 675	73,652 224 855	77,459 408 193	35
40	84,550 277 748	89,610 100 239	95,025 515 698	100,822 829 097	40
45	105,781 672 895	113,109 612 227	121,029 392 037	129,591 298 168	45
50	130,997 910 162	141,358 371 019	152,667 083 657	165,015 254 964	50
60	196,516 882 879	216,136 896 251	237,990 685 201	262,344 739 805	60
70	288,937 864 591	324,195 151 177	364,290 458 756	409,917 112 888	70
80	419,306 786 849	480,344 077 909	551,244 976 747	633,668 480 042	80
90	603,205 027 009	705,986 138 631	827,983 333 542	972,923 540 169	90
100	862,611 656 660	1 032,048 831 680	1 237,623 704 607	1 487,306 970 694	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 4½%	p = 4¾%	p = 5%	p = 5½%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,045 000 000	2,047 500 000	2,050 000 000	2,055 000 000	2
3	3,137 025 000	3,144 756 250	3,152 500 000	3,168 025 000	3
4	4,278 191 125	4,294 132 172	4,310 125 000	4,342 266 375	4
5	5,470 709 726	5,498 103 450	5,525 631 250	5,581 091 026	5
6	6,716 891 663	6,759 263 364	6,801 912 813	6,888 051 032	6
7	8,019 151 788	8,080 328 374	8,142 008 453	8,266 893 839	7
8	9,380 013 619	9,464 143 971	9,549 108 876	9,721 573 000	8
9	10,802 114 231	10,913 690 810	11,026 564 320	11,256 259 515	9
10	12,288 209 372	12,432 091 124	12,577 892 536	12,875 353 788	10
11	13,841 178 794	14,022 615 452	14,206 787 162	14,583 498 247	11
12	15,464 031 839	15,688 689 686	15,917 126 520	16,385 590 650	12
13	17,159 913 272	17,433 902 446	17,712 982 846	18,286 798 136	13
14	18,932 109 369	19,262 012 812	19,598 631 989	20,292 572 033	14
15	20,784 054 291	21,176 958 421	21,578 563 588	22,408 663 495	15
16	22,719 336 734	23,182 863 946	23,657 491 768	24,641 139 987	16
17	24,741 706 887	25,284 049 983	25,840 366 356	26,996 402 687	17
18	26,855 083 697	27,485 042 357	28,132 384 674	29,481 204 835	18
19	29,063 562 463	29,790 581 869	30,539 003 908	32,102 671 100	19
20	31,371 422 774	32,205 634 508	33,065 954 103	34,868 318 011	20
21	33,783 136 799	34,735 402 147	35,719 251 808	37,786 075 502	21
22	36,303 377 955	37,385 333 749	38,505 214 398	40,864 309 654	22
23	38,937 029 963	40,161 137 102	41,430 475 118	44,111 846 685	23
24	41,689 196 311	43,068 791 115	44,501 998 874	47,537 998 253	24
25	44,565 210 145	46,114 558 693	47,727 098 818	51,152 588 157	25
26	47,570 644 602	49,305 000 231	51,113 453 759	54,965 980 505	26
27	50,711 323 609	52,646 987 742	54,669 126 447	58,989 109 433	27
28	53,993 333 171	56,147 719 659	58,402 582 769	63,233 510 452	28
29	57,423 033 164	59,814 736 343	62,322 711 908	67,711 353 527	29
30	61,007 069 656	63,655 936 319	66,438 847 503	72,435 477 971	30
35	81,496 618 001	85,778 418 616	90,320 307 352	100,251 363 779	35
40	107,030 323 058	113,678 406 485	120,799 774 242	136,605 614 072	40
45	138,849 965 101	148,864 752 782	159,700 155 870	184,119 165 269	45
50	178,503 028 279	193,240 362 248	209,347 995 715	246,217 476 446	50
60	289,497 953 975	319,785 588 502	353,583 717 882	433,450 371 729	60
70	461,869 679 550	521,058 849 498	588,528 510 710	753,271 204 228	70
80	729,557 698 538	841,188 867 762	971,228 821 337	1 299,571 386 928	80
90	1 145,269 006 592	1 350,363 450 053	1 594,607 300 983	2 232,731 016 605	90
100	1 790,855 956 267	2 160,218 010 574	2 610,025 156 926	3 826,702 466 796	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 6%	p = 6½%	p = 7%	p = 8%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,060 000 000	2,065 000 000	2,070 000 000	2,080 000 000	2
3	3,183 600 000	3,199 225 000	3,214 900 000	3,246 400 000	3
4	4,374 616 000	4,407 174 625	4,439 943 000	4,506 112 000	4
5	5,637 092 960	5,693 640 976	5,750 739 010	5,866 600 960	5
6	6,975 318 538	7,063 727 639	7,153 290 741	7,335 929 037	6
7	8,393 837 650	8,522 869 936	8,654 021 093	8,922 803 360	7
8	9,897 467 909	10,076 856 481	10,259 802 569	10,636 627 629	8
9	11,491 315 983	11,731 852 153	11,977 988 749	12,487 557 839	9
10	13,180 794 942	13,494 422 543	13,816 447 961	14,486 562 466	10
11	14,971 642 639	15,371 560 008	15,783 599 319	16,645 487 463	11
12	16,869 941 197	17,370 711 408	17,888 451 271	18,977 126 460	12
13	18,882 137 669	19,499 807 650	20,140 642 860	21,495 296 577	13
14	21,015 065 929	21,767 295 147	22,550 487 860	24,214 920 303	14
15	23,275 969 885	24,182 169 332	25,129 022 010	27,152 113 927	15
16	25,672 528 078	26,754 010 338	27,888 053 551	30,324 283 042	16
17	28,212 879 763	29,493 021 010	30,840 217 299	33,750 225 685	17
18	30,905 652 549	32,410 067 376	33,999 032 510	37,450 243 740	18
19	33,759 991 701	35,516 721 755	37,378 964 786	41,446 263 239	19
20	36,785 591 204	38,825 308 670	40,995 492 321	45,761 964 298	20
21	39,992 726 676	42,348 953 733	44,865 176 784	50,422 921 442	21
22	43,392 290 276	46,101 635 726	49,005 739 159	55,456 755 157	22
23	46,995 827 693	50,098 242 048	53,436 140 900	60,893 295 570	23
24	50,815 577 354	54,354 627 781	58,176 670 763	66,764 759 216	24
25	54,864 511 996	58,887 678 587	63,249 037 716	73,105 939 953	25
26	59,156 382 715	63,715 377 695	68,676 470 356	79,954 415 149	26
27	63,705 765 678	68,856 877 245	74,483 823 281	87,350 768 361	27
28	68,528 111 619	74,332 574 266	80,697 690 911	95,338 829 830	28
29	73,639 798 316	80,164 191 593	87,346 529 275	103,965 936 216	29
30	79,058 186 215	86,374 864 047	94,460 786 324	113,283 211 113	30
35	111,434 779 872	124,034 690 260	138,236 878 352	172,316 803 679	35
40	154,761 965 619	175,631 915 902	199,635 111 989	259,056 518 710	40
45	212,743 513 791	246,324 586 624	285,749 310 838	386,505 617 379	45
50	290,335 904 583	343,179 671 980	406,528 929 472	573,770 156 415	50
60	533,128 180 889	657,689 842 135	813,520 383 350	1 253,213 295 840	60
70	967,932 169 649	1 248,068 665 741	1 614,134 174 252	2 720,080 073 770	70
80	1 746,599 891 369	2 356,290 874 235	3 189,062 679 688	5 886,935 428 311	80
90	3 141,075 187 182	4 436,576 301 641	6 287,185 426 792	12 723,938 615 978	90
100	5 638,368 058 575	8 341,558 015 878	12 381,661 793 806	27 484,515 704 266	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 9%	p = 10%	p = 11%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,090 000 000	2,100 000 000	2,110 000 000	2
3	3,278 100 000	3,310 000 000	3,342 100 000	3
4	4,573 129 000	4,641 000 000	4,709 731 000	4
5	5,984 710 610	6,105 100 000	6,227 801 410	5
6	7,523 334 565	7,715 610 000	7,912 859 565	6
7	9,200 434 676	9,487 171 000	9,783 274 117	7
8	11,028 473 797	11,435 888 100	11,859 434 270	8
9	13,021 036 438	13,579 476 910	14,163 972 040	9
10	15,192 929 718	15,937 424 601	16,722 008 964	10
11	17,560 293 392	18,531 167 061	19,561 429 950	11
12	20,140 719 798	21,384 283 767	22,713 187 245	12
13	22,953 384 579	24,522 712 144	26,211 637 842	13
14	26,019 189 192	27,974 983 358	30,094 918 004	14
15	29,360 916 219	31,772 481 694	34,405 358 985	15
16	33,003 398 678	35,949 729 864	39,189 948 473	16
17	36,973 704 559	40,544 702 850	44,500 842 805	17
18	41,301 337 970	45,599 173 135	50,395 935 514	18
19	46,018 458 387	51,159 090 448	56,939 488 420	19
20	51,160 119 642	57,274 999 493	64,202 832 147	20
21	56,764 530 410	64,002 499 443	72,265 143 683	21
22	62,873 338 147	71,402 749 387	81,214 309 488	22
23	69,531 938 580	79,543 024 326	91,147 883 532	23
24	76,789 813 052	88,497 326 758	102,174 150 720	24
25	84,700 896 227	98,347 059 434	114,413 307 299	25
26	93,323 976 887	109,181 765 377	127,998 771 102	26
27	102,723 134 807	121,099 941 915	143,078 635 923	27
28	112,968 216 940	134,209 936 106	159,817 285 875	28
29	124,135 356 464	148,630 929 717	178,397 187 321	29
30	136,307 538 546	164,494 022 689	199,020 877 926	30
35	215,710 754 650	271,024 368 481	341,589 554 795	35
40	337,882 445 044	442,592 555 682	581,826 066 415	40
45	525,858 734 495	718,904 836 851	986,638 559 472	45
50	815,083 556 398	1 163,908 528 797	1 668,771 152 184	50
60	1 944,792 132 892	3 034,816 395 414	4 755,065 839 421	60
70	4 619,223 179 758	7 887,469 567 994	13 518,355 743 557	70
80	10 950,574 090 310	20 474,002 145 855	38 401,025 004 367	80
90	25 939,184 247 048	53 120,226 118 483	109 053,398 292 925	90
100	61 422,675 464 732	137 796,123 398 223	309 665,229 724 037	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 12%	p = 13%	p = 14%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,120 000 000	2,130 000 000	2,140 000 000	2
3	3,374 400 000	3,406 900 000	3,439 600 000	3
4	4,779 328 000	4,849 797 000	4,921 144 000	4
5	6,352 847 360	6,480 270 610	6,610 104 160	5
6	8,115 189 043	8,322 705 789	8,535 518 742	6
7	10,089 011 728	10,404 657 542	10,730 491 366	7
8	12,299 693 136	12,757 263 022	13,232 760 158	8
9	14,775 656 312	15,415 707 215	16,085 346 580	9
10	17,548 735 070	18,419 749 153	19,337 295 101	10
11	20,654 583 278	21,814 316 543	23,044 516 415	11
12	24,133 133 271	25,650 177 694	27,270 748 713	12
13	28,029 109 264	29,984 700 794	32,088 653 533	13
14	32,392 602 375	34,882 711 897	37,581 065 027	14
15	37,279 714 660	40,417 464 444	43,842 414 131	15
16	42,753 280 420	46,671 734 822	50,980 352 110	16
17	48,883 674 070	53,739 060 348	59,117 601 405	17
18	55,749 714 959	61,725 138 194	68,394 065 602	18
19	63,439 680 754	70,749 406 159	78,969 234 786	19
20	72,052 442 444	80,946 828 959	91,024 927 656	20
21	81,698 735 537	92,469 916 724	104,768 417 528	21
22	92,502 583 802	105,491 005 898	120,435 995 982	22
23	104,602 893 858	120,204 836 665	138,297 035 419	23
24	118,155 241 121	136,831 465 432	158,658 620 378	24
25	133,333 870 055	155,619 555 938	181,870 827 231	25
26	150,333 934 462	176,850 098 209	208,332 743 043	26
27	169,374 006 597	200,840 610 977	238,499 327 069	27
28	190,698 887 389	227,949 890 404	272,889 232 859	28
29	214,582 753 876	258,583 376 156	312,093 725 459	29
30	241,332 684 341	293,199 215 056	356,786 847 024	30
35	431,663 496 493	546,680 818 973	693,572 702 228	35
40	767,091 420 345	1 013,704 243 335	1 342,025 098 984	40
45	1 358,230 032 259	1 874,164 629 936	2 590,564 799 691	45
50	2 400,018 248 583	3 459,507 116 603	4 994,521 346 137	50
60	7 471,641 112 425	11 761,949 792 378	18 535,133 283 320	60
70	23 223,331 897 487	39 945,150 956 263	68 733,178 463 053	70
80	72 145,692 500 663	135 614,926 570 804	254 828,441 480 446	80
90	224 091,118 528 005	460 372,427 073 100	944 724,766 995 026	90
100	696 010,547 721 125	1 562 783,647 910 847	3 502 323,129 474 757	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 15%	p = 16%	p = 17%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,150 000 000	2,160 000 000	2,170 000 000	2
3	3,472 500 000	3,505 600 000	3,538 900 000	3
4	4,993 375 000	5,066 496 000	5,140 513 000	4
5	6,742 381 250	6,877 135 360	7,014 400 210	5
6	8,753 738 438	8,977 477 018	9,206 848 246	6
7	11,066 799 203	11,413 873 340	11,772 012 447	7
8	13,726 819 084	14,240 093 075	14,773 254 564	8
9	16,785 841 946	17,518 507 967	18,284 707 839	9
10	20,303 718 238	21,321 469 242	22,393 108 172	10
11	24,349 275 974	25,732 904 320	27,199 936 561	11
12	29,001 667 370	30,850 169 011	32,823 925 777	12
13	34,351 917 475	36,786 196 053	39,403 993 159	13
14	40,504 705 097	43,671 987 422	47,102 671 996	14
15	47,580 410 861	51,659 505 409	56,110 126 235	15
16	55,717 472 490	60,925 026 275	66,648 847 695	16
17	65,075 093 364	71,673 030 479	78,979 151 803	17
18	75,836 357 368	84,140 715 355	93,405 607 610	18
19	88,211 810 974	98,603 229 812	110,284 560 903	19
20	102,443 582 620	115,379 746 582	130,032 936 257	20
21	118,810 120 013	134,840 506 035	153,138 535 420	21
22	137,631 638 014	157,414 987 001	180,172 086 442	22
23	159,276 383 717	183,601 384 921	211,801 341 137	23
24	184,167 841 274	213,977 606 508	248,807 569 130	24
25	212,793 017 465	249,214 023 550	292,104 855 882	25
26	245,711 970 085	290,088 267 318	342,762 681 382	26
27	283,568 765 598	337,502 390 089	402,032 337 217	27
28	327,104 080 437	392,502 772 503	471,377 834 544	28
29	377,169 692 503	456,303 216 103	552,512 066 417	29
30	434,745 146 379	530,311 730 680	647,439 117 708	30
35	881,170 156 149	1 120,712 954 821	1 426,491 022 064	35
40	1 779,090 308 231	2 360,757 240 582	3 134,521 839 478	40
45	3 585,128 459 923	4 965,273 911 235	6 879,290 650 032	45
50	7 217,716 277 226	10 435,648 772 521	15 089,501 672 882	50
60	29 219,991 637 716	46 057,508 532 811	72 555,038 128 939	60
70	118 231,466 925 521	203 201,030 246 101	348 782,010 169 096	70
80	478 332,529 342 874	896 429,474 314 696	1 676 557,661 246 849	80
90	1 935 142,168 042 032	3 954 561,749 996 794	8 058 947,355 395 372	90
100	7 828 749,671 335 256	17 445 313,746 092 298	38 737 999,328 451 857	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 18%	p = 19%	p = 20%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,180 000 000	2,190 000 000	2,200 000 000	2
3	3,572 400 000	3,606 100 000	3,640 000 000	3
4	5,215 432 000	5,291 259 000	5,368 000 000	4
5	7,154 209 760	7,296 598 210	7,441 600 000	5
6	9,441 967 517	9,682 951 870	9,929 920 000	6
7	12,141 521 670	12,522 712 725	12,915 904 000	7
8	15,326 995 570	15,902 028 143	16,499 084 800	8
9	19,085 854 773	19,923 413 490	20,798 901 760	9
10	23,521 308 632	24,708 862 053	25,958 682 112	10
11	28,755 144 186	30,403 545 843	32,150 418 534	11
12	34,931 070 139	37,180 219 554	39,580 502 241	12
13	42,218 662 765	45,244 461 269	48,496 602 690	13
14	50,818 022 062	54,840 908 910	59,195 923 227	14
15	60,965 266 033	66,260 681 603	72,035 107 873	15
16	72,939 013 919	79,850 211 107	87,442 129 448	16
17	87,068 036 425	96,021 751 218	105,930 555 337	17
18	103,740 282 981	115,265 883 949	128,116 666 404	18
19	123,413 533 918	138,166 401 899	154,739 999 685	19
20	146,627 970 023	165,418 018 260	186,687 999 622	20
21	174,021 004 628	197,847 441 730	225,025 599 547	21
22	206,344 785 461	236,438 455 658	271,030 719 456	22
23	244,486 846 843	282,361 762 233	326,236 863 347	23
24	289,494 479 275	337,010 497 058	392,484 236 017	24
25	342,603 485 545	402,042 491 499	471,981 083 220	25
26	405,272 112 943	479,430 564 883	567,377 299 864	26
27	479,221 093 273	571,522 372 211	681,852 759 837	27
28	566,480 890 062	681,111 622 931	819,223 311 805	28
29	669,447 450 273	811,522 831 288	984,067 974 166	29
30	790,947 991 322	966,712 169 233	1 181,881 568 999	30
35	1 816,651 612 132	2 314,213 721 329	2 948,341 145 771	35
40	4 163,213 026 818	5 529,828 981 894	7 343,857 839 845	40
45	9 531,577 105 073	13 203,424 227 774	18 281,309 940 044	45
50	21 813,093 666 429	31 515,336 327 371	45 497,190 750 011	50
60	114 189,666 478 328	179 494,583 785 655	281 732,571 765 834	60
70	597 673,457 599 304	1 022 189,605 560 221	1 744 439,784 661 048	70
80	3 128 148,113 253 590	5 821 071,286 073 086	10 801 137,310 051 535	80
90	16 372 236,334 003 182	33 149 185,002 784 522	66 877 821,244 671 760	90
100	85 689 616,141 407 214	188 774 151,199 845 918	414 089 867,610 072 751	100

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 22%	p = 25%	p = 28%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,220 000 000	2,250 000 000	2,280 000 000	2
3	3,708 400 000	3,812 500 000	3,918 400 000	3
4	5,524 248 000	5,765 625 000	6,015 552 000	4
5	7,739 582 560	8,207 031 250	8,699 906 560	5
6	10,442 290 723	11,258 789 063	12,135 880 397	6
7	13,739 594 682	15,073 486 328	16,533 926 908	7
8	17,762 305 512	19,841 857 910	22,163 426 442	8
9	22,670 012 725	25,802 322 388	29,369 185 846	9
10	28,657 415 525	33,252 902 985	38,592 557 883	10
11	35,962 046 940	42,566 128 731	50,398 474 090	11
12	44,873 697 267	54,207 660 913	65,510 046 835	12
13	55,745 910 666	68,759 576 142	84,852 859 949	13
14	69,010 011 012	86,949 470 177	109,611 660 735	14
15	85,192 213 435	109,686 837 722	141,302 925 740	15
16	104,934 500 390	138,108 547 152	181,867 744 948	16
17	129,020 090 476	173,635 683 940	233,790 713 533	17
18	158,404 510 381	218,044 604 925	300,252 113 322	18
19	194,253 502 665	273,555 756 156	385,322 705 053	19
20	237,989 273 251	342,944 695 195	494,213 062 467	20
21	291,346 913 366	429,680 868 994	633,592 719 958	21
22	356,443 234 307	538,101 086 243	811,998 681 546	22
23	435,860 745 855	673,626 357 803	1 040,358 312 379	23
24	532,750 109 943	843,032 947 254	1 332,658 639 845	24
25	650,955 134 130	1 054,791 184 068	1 706,803 059 002	25
26	795,165 263 639	1 319,488 980 085	2 185,707 915 523	26
27	971,101 621 639	1 650,361 225 106	2 798,706 131 869	27
28	1 185,743 978 400	2 063,951 531 383	3 583,343 848 792	28
29	1 447,607 653 648	2 580,939 414 228	4 587,680 126 454	29
30	1 767,081 337 450	3 227,174 267 785	5 873,230 561 861	30
31	2 156,839 231 689	4 034,967 834 732	7 518,735 119 183	31
32	2 632,343 862 661	5 044,709 793 414	9 624,980 952 554	32
33	3 212,459 512 446	6 306,887 241 768	12 320,975 619 269	33
34	3 920,200 605 184	7 884,609 052 210	15 771,848 792 664	34
35	4 783,644 738 324	9 856,761 315 263	20 188,966 454 610	35
38	8 690,080 130 797	19 255,299 443 872	42 343,249 778 218	38
40	12 936,535 266 678	30 088,655 381 051	69 377,460 436 633	40
45	34 971,419 051 336	91 831,496 157 991	238 387,838 830 459	45
50	94 525,279 331 294	280 255,692 864 963	819 103,077 139 311	50

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 30%	p = 35%	p = 40%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,300 000 000	2,350 000 000	2,400 000 000	2
3	3,990 000 000	4,172 500 000	4,360 000 000	3
4	6,187 000 000	6,632 875 000	7,104 000 000	4
5	9,043 100 000	9,954 381 250	10,945 600 000	5
6	12,756 030 000	14,438 414 688	16,323 840 000	6
7	17,582 839 000	20,491 859 828	23,853 376 000	7
8	23,857 690 700	28,664 010 768	34,394 726 400	8
9	32,014 997 910	39,696 414 537	49,152 616 960	9
10	42,619 497 283	54,590 159 625	69,813 663 744	10
11	56,405 346 468	74,696 715 493	98,739 129 242	11
12	74,326 950 408	101,840 565 916	139,234 780 938	12
13	97,625 035 531	138,484 763 986	195,928 693 314	13
14	127,912 546 190	187,954 431 382	275,300 170 639	14
15	167,286 310 047	254,738 482 365	386,420 238 895	15
16	218,472 203 061	344,896 951 193	541,988 334 452	16
17	285,013 863 979	466,610 884 111	759,783 668 233	17
18	371,518 023 173	630,924 693 549	1 064,697 135 527	18
19	483,973 430 125	852,748 336 292	1 491,575 989 737	19
20	630,165 459 163	1 152,210 253 994	2 089,206 385 632	20
21	820,215 096 912	1 556,483 842 892	2 925,888 939 885	21
22	1 067,279 625 985	2 102,253 187 904	4 097,244 515 839	22
23	1 388,463 513 780	2 839,041 803 670	5 737,142 322 175	23
24	1 806,002 567 915	3 833,706 434 955	8 032,999 251 044	24
25	2 348,803 338 289	5 176,503 687 189	11 247,198 951 462	25
26	3 054,444 339 776	6 989,279 977 705	15 747,078 532 047	26
27	3 971,777 641 708	9 436,527 969 902	22 046,909 944 866	27
28	5 164,310 934 221	12 740,312 759 368	30 866,673 922 812	28
29	6 714,604 214 487	17 200,422 225 146	43 214,343 491 937	29
30	8 729,985 478 833	23 221,570 003 947	60 501,080 888 711	30
31	11 349,981 122 483	31 350,119 505 329	84 702,513 244 196	31
32	14 755,975 459 228	42 323,661 332 194	118 584,518 541 875	32
33	19 183,768 096 996	57 137,942 798 462	166 019,325 958 624	33
34	24 939,898 526 095	77 137,222 777 923	232 428,056 342 074	34
35	32 422,868 083 924	104 136,250 750 197	325 400,278 878 904	35
38	71 237,031 180 381	256 218,400 439 515	892 902,725 243 712	38
40	120 392,882 694 844	466 960,384 801 016	1 750 091,741 477 675	40
45	447 019,389 044 166	2 093 875,933 816 872	9 412 424,353 284 890	45
50	1 659 760,743 263 757	9 389 019,655 592 643	50 622 288,099 410 928	50

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 45%	p = 50%	p = 60%	n
1	1,000 000 000	1,000 000 000	1,000 000 000	1
2	2,450 000 000	2,500 000 000	2,600 000 000	2
3	4,552 500 000	4,750 000 000	5,160 000 000	3
4	7,601 125 000	8,125 000 000	9,256 000 000	4
5	12,021 631 250	13,187 500 000	15,809 600 000	5
6	18,431 365 313	20,781 250 000	26,295 360 000	6
7	27,725 479 703	32,171 875 000	43,072 576 000	7
8	41,201 945 570	49,257 812 500	69,916 121 600	8
9	60,742 821 076	74,886 718 750	112,865 794 560	9
10	89,077 090 560	113,330 078 125	181,585 271 296	10
11	130,161 781 312	170,995 117 188	291,536 434 074	11
12	189,734 582 902	257,492 675 781	467,458 294 518	12
13	276,115 145 208	387,239 013 672	748,933 271 228	13
14	401,366 960 552	581,858 520 508	1 199,293 233 965	14
15	582,982 092 800	873,787 780 762	1 919,869 174 345	15
16	846,324 034 561	1 311,681 671 143	3 072,790 678 952	16
17	1 228,169 850 113	1 968,522 506 714	4 917,465 086 323	17
18	1 781,846 282 664	2 953,783 760 071	7 868,944 138 116	18
19	2 584,677 109 862	4 431,675 640 106	12 591,310 620 986	19
20	3 748,781 809 301	6 648,513 460 159	20 147,096 993 577	20
21	5 436,733 623 486	9 973,770 190 239	32 236,355 189 723	21
22	7 884,263 754 054	14 961,655 285 358	51 579,168 303 558	22
23	11 433,182 443 379	22 443,482 928 038	82 527,669 285 692	23
24	16 579,114 542 899	33 666,224 392 056	132 045,270 857 107	24
25	24 040,716 087 204	50 500,336 588 085	211 273,433 371 372	25
26	34 860,038 326 446	75 751,504 882 127	338 038,493 394 195	26
27	50 548,055 573 346	113 628,257 323 191	540 862,589 430 711	27
28	73 295,680 581 352	170 443,385 984 786	865 381,143 089 138	28
29	106 279,736 842 961	255 666,078 977 179	1 384 610,828 942 621	29
30	154 106,618 422 293	383 500,118 465 768	2 215 378,326 308 193	30
31	223 455,596 712 325	575 251,177 698 652	3 544 606,322 093 109	31
32	324 011,615 232 871	862 877,766 547 978	5 671 371,115 348 974	32
33	469 817,842 087 663	1 294 317,649 821 968	9 074 194,784 558 359	33
34	681 236,871 027 111	1 941 477,474 732 951	14 518 712,655 293 374	34
35	987 794,462 989 310	2 912 217,212 099 427	23 229 941,248 469 399	35
38	3 011 419,447 230 787	9 828 737,840 835 566	95 149 844,513 730 659	38
40	6 331 511,837 802 729	22 114 662,641 880 024	243 583 604,555 150 486	40
45	40 583 319,115 517 375	167 933 232,624 276 434	2 554 159 233,109 814 764	45
50	260 128 294,925 670 341	1 275 242 998,428 099 174	26 782 300 735,983 171 259	50

Tabelle 7 : $\frac{(1+i)^n-1}{i}$

n	p = 70%	p = 80%	n
1	1,000 000 000	1,000 000 000	1
2	2,700 000 000	2,800 000 000	2
3	5,590 000 000	6,040 000 000	3
4	10,503 000 000	11,872 000 000	4
5	18,855 100 000	22,369 600 000	5
6	33,053 670 000	41,265 280 000	6
7	57,191 239 000	75,277 504 000	7
8	98,225 106 300	136,499 507 200	8
9	167,982 680 710	246,699 112 960	9
10	286,570 557 207	445,058 403 328	10
11	488,169 947 252	802,105 125 990	11
12	830,888 910 328	1 444,789 226 783	12
13	1 413,511 147 558	2 601,620 608 209	13
14	2 403,968 950 849	4 683,917 094 776	14
15	4 087,747 216 443	8 432,050 770 597	15
16	6 950,170 267 952	15 178,691 387 074	16
17	11 816,289 455 519	27 322,644 496 734	17
18	20 088,692 074 382	49 181,760 094 121	18
19	34 151,776 526 450	88 528,168 169 417	19
20	58 059,020 094 965	159 351,702 704 951	20
21	98 701,334 161 441	286 834,064 868 912	21
22	167 793,268 074 450	516 302,316 764 041	22
23	285 249,555 726 565	929 345,170 175 274	23
24	484 925,244 735 160	1 672 822,306 315 493	24
25	824 373,916 049 772	3 011 081,151 367 888	25
26	1 401 436,657 284 612	5 419 947,072 462 199	26
27	2 382 443,317 383 840	9 755 905,730 431 957	27
28	4 050 154,639 552 529	17 560 631,314 777 523	28
29	6 885 263,887 239 299	31 609 137,366 599 542	29
30	11 704 949,608 306 808	56 896 448,259 879 175	30
31	19 898 415,334 121 573	102 413 607,867 782 516	31
32	33 827 307,068 006 675	184 344 495,162 008 528	32
33	57 506 423,015 611 347	331 820 092,291 615 351	33
34	97 760 920,126 539 291	597 276 167,124 907 632	34
35	166 193 565,215 116 794	1 075 097 101,824 833 738	35
36	282 529 061,865 698 550	1 935 174 784,284 700 728	36
37	480 299 406,171 687 535	3 483 314 612,712 461 311	37
38	816 508 991,491 868 809	6 269 966 303,882 430 359	38
39	1 388 065 286,536 176 975	11 285 939 347,988 374 647	39
40	2 359 710 988,111 500 858	20 314 690 827,379 074 364	40