Compound Interest

Liberal Arts Mathematics

Assignment Text

The answer the following problems from Section 6.4 of the textbook: 11 - 14, 19 - 22, 35, 37.

For reference, the text of the problems are duplicated below.

In the following exercises, rewrite the percent in decimal form.

11. Principal = $13,800, annual interest rate = 2.55%, compounded quarterly, for 18 years

12. Principal = $150,000, annual interest rate = 2.95%, compounded quarterly, for 30 years

13. Principal = $3,500, annual interest rate = 2.9%, compounded monthly, for 7 years

14. Principal = $1,500, annual interest rate = 3.23%, compounded monthly, for 30 years.

19. Future value = $1,500,000, annual interest rate = 4.81%, compounded quarterly, for 35 years

20. Future value = $750,000, annual interest rate = 3.95%, compounded quarterly, for 10 years

21. Future value = $600,000, annual interest rate = 3.79%, compounded monthly, for 17 years

22. Future value = $800,000, annual interest rate = 4.23%, compounded monthly, for 35 years

35. Daria invests $2,500 in a CD that yields 3.5% compounded quarterly for 5 years. How much is the CD worth after those 5 years?

37. Georgita is shopping for an account to invest her money in. She wants the account to grow to $400,000 in 30 years. She finds an account that earns 4.75% compounded monthly. How much does she need to deposit to reach her goal?

Answer Key

11. $21,806.58

12. $362,269.29

13. $4,286.70

14. $3,947.82

19. $281,395.75

20. $506,239.96

21. $315,337.97

22. $182,493.58

35. $2,975.85

37. $96,474.38

Student Feedback Templates

#11 should be $21,806.58 (FV = 13800 * (1 + 0.0255/4) ^ 18*4 = 13800*(1.006375)^72 = 13800*1.58019 = 21806.57911…, round to 21806.58)

#12 should be $362,269.29 (FV = 150000 * (1 + 0.0295/4) ^ 30*4 = 150000*(1.007375)^120 = 150000*2.41513 = 362269.284…, round to 362269.29)

#13 should be $4,286.70 (FV = 3500 * (1 + 0.029/12) ^ 7*12 = 3500*(1.002417)^84 = 3500*1.22477 = 4286.703709…, round to 4286.70)

#14 should be $3,947.82 (FV = 1500 * (1 + 0.0323 / 12) ^ 30*12 = 1500*(1.00269)^360 = 1500*2.63188 = 3947.819223…, round to 3947.82)

#19 should be $281,395.75 (PV = 1500000 / (1 + 0.0481 / 4) ^ 35*4 = 1500000/(1.012025)^140 = 1500000/5.33057 = 281395.7413…, round up to 281395.75)

#20 should be $506,239.96 (PV = 750000 / (1 + 0.0395 / 4) ^ 10*4 = 750000/(1.009875)^40 = 750000/1.48151 = 506239.9538…, round up to 506239.96)

#21 should be $315,337.97 (PV = 600000 / (1 + 0.0379 / 12) ^ 17*12 = 600000/(1.00316)^204 = 600000/1.90272 = 315337.9671…, round up to 315337.97)

#22 should be $182,493.58 (PV = 800000 / (1 + 0.0423 / 12) ^ 35*12 = 800000/(1.003525)^420 = 800000/4.38372 = 182493.5798…, round up to 182493.58)

#35 should be $2,975.85 (FV = 2500 * (1 + 0.035 / 4) ^ 5*4 = 2500*(1.00875)^20 = 2500*1.19034 = 2975.849498…, round to 2975.85)

#37 should be $96,474.38 (PV = 400000 / (1 + 0.0475 / 12) ^ 30*12 = 400000/(1.00396)^360 = 400000/4.14618 = 96474.37598…, round up to 96474.38).