MCR3UI 8.1 Simple Interest

p.481

5a) $I = Prt$ $A = P(1+rt)$

$= 500(0.048)(8)$ $= 500(1+(0.048)(8))$

$= \$192$ $= 500(1.384)$

$= \$692$

b) $I = Prt$ $A = P + I$

$= 3200(0.098)(12)$ $= 3200 + 3763.20$

$= \$3763.20$ $= \$6963.20$

c) $I = 5000(0.039)(\frac{16}{12})$ $A = P + I$

$= \$260$ $= 5000 + 260$

$= \$5260$

d) $I = 128(0.18)(\frac{5}{12})$ $A = P + I$

$= \$9.60$ $= 128 + 9.60$

$= \$137.60$

e) $I = 50000(0.24)(\frac{17}{52})$ $A = P + I$

$\doteq 3923.076$ $= 50000 + 3923.08$

$\doteq \$3923.08$ $= \$53\,923.08$

f) $I = 4500(0.12)(\frac{100}{365})$ $A = P + I$

$\doteq 147.945$ $\doteq 4500 + 147.95$

$\doteq \$147.95$ $\doteq \$4647.95$

p.482

6. $P = 4800$ $A = 8000$ $t = 8.5$

$A = P(1+rt)$

$8000 = 4800(1 + r(8.5))$

$\frac{80}{48} = 1 + 8.5r$

$\frac{80}{48} - \frac{48}{48} = 8.5r$

$\frac{32}{48} = 8.5r$

$r \doteq 0.0784$

$\doteq 7.84\%/a$

7. $r = 6.3\%$, $I = 250$, $t = \frac{1}{12}$

$I = Prt$

$250 = P(0.063)(\frac{1}{12})$

$\frac{250}{0.063(\frac{1}{12})} = P$

$P = 47\,619.047$

$\doteq \$47\,619.05$

8. $P = \$3500$ $r = 0.055$

a) $I = (3500)(0.055)(1)$

$= \$192.50$

b) $A_1 = 3500 + 192.50$ $A_2 = A_1 + 192.50$

$= 3692.50$ $= 3885$

$A_3 = A_2 + 192.50$ $A_4 = A_3 + 192.50$

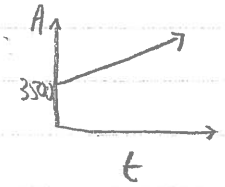
$= 4077.50$ $= 4270$

$A_5 = A_4 + 192.10$

$= 4462.50$

c) $A_n = 3500 + n(192.50)$

d)



9a) $I = 4048.64 - 3994.32$

$= 254.32$

$\therefore P = 3994.32 - 254.32$

$= \$3740$

b) $r = \frac{I}{Pt}$

$= \frac{254.32}{(3740)(\frac{1}{4})}$

$= 0.272$

$= 27.2\%$

10a) $I = 2312.50 - 2081.25$ $\therefore P = 2081.25 - 231.25$

$= \$231.25$ $= \$1850$

b) $t_n = 1850 + 231.25n$

c) $7500 = 1850 + 231.25n$

$5650 = 231.25n$

$n \doteq 24.43$

$= 24 + 0.43(365)$

$\doteq 24$ years, 157.8 days

MCR 3UI 8.2 Compound Interest: Future Value

p. 490

4a) $A = 4000\left(1+\frac{0.03}{1}\right)^{4}$
$= 4502.035$
$\doteq \$4502.04$
$I = A - P$
$= 4502.04 - 4000$
$= \$502.04$

b) $A = 7500\left(1+\frac{0.06}{12}\right)^{72}$
$\doteq 10740.332$
$\doteq \$10740.33$
$I = A - P$
$\doteq 10740.33 - 7500$
$\doteq \$3240.33$

c) $A = 15000\left(1+\frac{0.024}{4}\right)^{20}$
$\doteq 16906.389$
$\doteq \$16906.39$
$I \doteq 16906.39 - 15000$
$\doteq \$1906.39$

d) $A = 28200\left(1+\frac{0.055}{2}\right)^{20}$
$\doteq 48516.081$
$\doteq \$48516.08$
$I = 48516.08 - 28200$
$= \$20316.08$

e) $A = 850\left(1+\frac{0.0365}{365}\right)^{365}$
$\doteq 881.596$
$\doteq \$881.60$
$I \doteq 881.60 - 850$
$= \$31.60$

f) $A = 2225\left(1+\frac{0.052}{52}\right)^{47}$
$\doteq 2332.016$
$\doteq \$2332.02$
$I \doteq 2332.02 - 2225$
$\doteq \$107.02$

5a) $r = \frac{\text{Difference}}{\text{original}} \times 100\%$ WRONG COURSE
$= \frac{4494.40 - 4240}{4240} \times 100\%$
$= 0.06 \times 100\%$
$= 6\%/a$

5a) $A = P(1+rt)$
$4494.40 = 4240(1+r(1))$
$\frac{4494.40}{4240} = 1+r$
$1.06 = 1+r$
$\therefore r = 0.06$
$= 6\%$

b) $A = P(1+rt)$
$4240 = P(1.06)$
$\frac{4240}{1.06} = P$
$P = \$4000$

6 $A = 25000$
$P = 10000$
$i = \frac{0.072}{12}$
$n = 12n$

$25000 = 10000\left(1+\frac{0.072}{12}\right)^{12n}$
$2.5 = 1.006^{12n}$
$12n = \frac{\log 2.5}{\log 1.006}$
$n \doteq 12.764$ years

7. option 1
$A = 15000\left(1+\frac{0.10}{4}\right)^{40}$
$\doteq 40275.957$
$\doteq \$40275.96$

option 2
$A_1 = 15000\left(1+\frac{0.12}{4}\right)^{20}$
$\doteq 27091.608$
$\doteq \$27091.67$
$A_2 \doteq 27091.67\left(1+\frac{0.06}{4}\right)^{20}$
$\doteq 36488.55$

8. $A(n) = 5000 \times 1.0075^{12n}$
$P = 5000$, monthly (12n); $r = 0.0075 \times 12$
$= 0.09 \rightarrow 9\%$

$\therefore$ Save $= \$3787.41$

9. Plan A
$A = P(1+rt)$
$= 949.99(1+(0.10)(2))$
$\doteq 1139.988$
$\doteq \$1139.99$

Plan B
$A = P(1+i)^{n}$
$= 949.99\left(1+\frac{0.05}{4}\right)^{8}$
$\doteq 1049.250$
$\doteq \$1049.25$

Choose Plan B and save $\$90.74$

11. $A_3 \doteq 9000\left(1+\frac{0.10}{4}\right)^{12}$
$\doteq 12103.999$
$\doteq \$12104$
$\downarrow$
$A_5 \doteq 12104\left(1+\frac{0.09}{2}\right)^{4}$
$\doteq 14434.245$
$\doteq \$14434.25$

$\times$ 1.244 if use