MATH 111

HW # 7

Ex 5.1

40/ $P = \$100$; $r = 0.12$; $t = 2$ yrs.

interest due $= Prt$

$= \$100 \times 0.12 \times 2$

$= \$24$

46/ $A = \$900$; $P = \$800$; $t = 3/12 = 1/4$ yrs

$A = P(1 + rt)$

$900 = 800(1 + r/4)$

$9/8 = 1 + r/4$

$r/4 = 1/8$

$r = 1/2$ or 50%

$P = \$600$; $I = \$156$; $r = 0.08$

$I = Prt$

$156 = 600(0.08)t$

$156 = 48t$

$t = 3.25$ years

Ex 5.1

56) $P = \$10{,}000$, $r = 0.10$, $t = 3$

$I = 10{,}000\,(0.10)(3)$

$= \underline{3{,}000}$

57) $P = \$600$, $r = 0.08$, $I = \$156$

$156 = 600\,(0.08)\,t$

$t = \dfrac{156}{48}$

$= 3\frac{1}{4}$ years

Ex. 5.2

40/ $A = 3P$; $i = ?$; $n = 10$

$$3P = P(1+i)^{10}$$
$$3 = (1+i)^{10}$$
$$\sqrt[10]{3} = 1+i$$
$$i = \sqrt[10]{3} - 1$$
$$= 0.1161 \text{ or } 11.61\%$$

43/ $r_e = 0.07$, $m = 4$

$$0.07 = (1+i)^4 - 1$$
$$(1+i)^4 = 1.07$$
$$1+i = \sqrt[4]{1.07}$$
$$i = \sqrt[4]{1.07} - 1$$
$$= 0.01706$$
$$\text{annual rate} = 4 \times 0.01706$$
$$= 0.0682 \text{ or } 6.82\%$$

49/ $r = 0.03$; $i = \frac{0.03}{2} = 0.015$; $A = 5000$

(a) $5000 = P(1+0.015)^{2\times 4}$

$5000 = P(1.126492587)$

$P = 4,438.56$

(b) $5000 = P(1+0.015)^{2\times 8}$

$5000 = P(1.268985548)$

$P = 3,940.16$

60/ $r = 0.03$; $i = \frac{0.03}{12} = 0.0025$; $n = 6$; $A = 3000$

$$3000 = P(1+0.0025)^6$$

$$P = \frac{3000}{(1.0025)^6}$$

$$= \underline{2955.39}$$

64/ After 3 months, Kim will have

$$A = 1000\left(1 + \frac{0.068}{365}\right)^{90}$$

$$= 1016.91$$

After another month, Kim has

$$A = 1016.91\left(1 + \frac{0.0525}{12}\right)^{1}$$

$$= \underline{1021.36}$$

66/ If she invests $1000 now in an investment that pays 10% interest compounded daily then after 3 years she will have $1000\left(1 + \frac{0.10}{365}\right)^{3\times 365}$

$$= 1,349.80$$

which is more than $1325 after 3 years. She should take the $1000 now.

Ex. 5.2

68/ $P = 3000$; $r = 0.10$; $i = \frac{0.10}{4} = 0.025$; $n = 4 \times 17 = 68$

$$A = 3000\,(1 + 0.025)^{68}$$
$$= \underline{16,082.15}$$

70/ (a) If the bank uses 360 days then the effective rate

$$r_e = \left(1 + \frac{0.0625}{360}\right)^{360} - 1$$
$$= \underline{0.0644886 \text{ or } 6.44886\%}$$

(b) If the bank uses 365 days then the effective rate

$$r_e = \left(1 + \frac{0.0625}{365}\right)^{365} - 1$$
$$= \underline{0.0644888 \text{ or } 6.44888\%}$$

74/ $P = 2000$; $A = 5500$; $n = 20$

$$5500 = 2000\,(1 + r)^{20}$$
$$2.75 = (1 + r)^{20}$$
$$1 + r = \sqrt[20]{2.75}$$
$$r = \sqrt[20]{2.75} - 1$$
$$= \underline{0.05188 \text{ or } 5.188\%}$$