Math 107 Quiz #3 Answers

1. Investment A:
   Total Return $= \frac{1350-1000}{1000} = 0.35$ or $\boxed{35\%}$ Annual Return $= (\frac{1350}{1000})^{1/2} - 1 \approx 0.1619 = \boxed{16.19\%}$

   Investment B:
   Total Return $= \frac{70-40}{40} = 0.75$ or $\boxed{75\%}$ Annual Return $= (\frac{70}{40})^{1/5} - 1 \approx 0.1184 = \boxed{11.84\%}$

   (Note: For investment B, you can also use $P = 40(60) = 2400$ and $A = 70(60) = 4200$.)

   $\boxed{\text{Investment A has a higher annual return.}}$

2. $A = 1200[\frac{(1+\frac{0.036}{4})^{4(5)}-1}{\frac{0.036}{4}}] = \$26{,}167.17$ So, you will have $\boxed{\$26{,}167.17 \text{ after 5 years.}}$

   Since you make total payments of $1200(20) = \$24{,}000$, you will have earned $\boxed{\$2{,}167.17 \text{ in interest.}}$

3. $6000 = PMT[\frac{(1+\frac{0.03}{12})^{12(1.5)}-1}{\frac{0.03}{12}}] \quad \Rightarrow \quad PMT = \boxed{\$326.31 \text{ each month}}$

4. You take out a loan of $\$250{,}000 - 90{,}000 = \$190{,}000$.

   $PMT = \frac{190{,}000(\frac{0.0492}{12})}{1-(1+\frac{0.0492}{12})^{-12(30)}} = \boxed{\$1010.69 \text{ each month}}$

   Since you will make total payments of $1010.69(360) = \$363{,}848.40$, you will have paid $\$363{,}848.40 - 190{,}000 = \boxed{\$173{,}848.40 \text{ in interest.}}$