Problem 2

Recall that $A = P + I$ where $I = Prt$.

$P = \$10{,}000$

$I = \$3{,}500$

$t = 7$ yr.

Solve the above equation for r

$$Prt = I$$

$$r = \frac{I}{Pt} = \frac{3{,}500}{10{,}000 \cdot 7} = .05$$

the bond has a simple interest of 5%

Problem 3

Say that Alan's stock is initially worth \$1000. After a growth of 20% the value of Alan's stock is \$1200. After an additional growth of 10% the value of Alan's stock is \$1320. A decrease of 10% lowers the value of Alan's stock to \$1188. An additional decrease of 20% drops the value of Alan's stock to \$950.4 which is smaller than the initial value of his stock

Problem 4

Treat the \$680 as the principal P and the accumulated amount after 5 years as the current rate.

$$\text{so } A = P(1+rt) = 680\left(1 + \frac{8}{100} \cdot 5\right) = \$986$$

Problem 5

Assume that the purchase price of the bond is the initial investment and the face value of the bond is the accumulated amount.

$$A = P(1 + rt)$$

$$\frac{A}{1+rt} = P \quad \text{so} \quad P = \frac{\$10,000}{1 + \frac{5.25}{100}10} = \$6557$$

Problem 1

Recall that the compound interest formula is given by

$$A = P\left(1 + \frac{r}{m}\right)^{mt}$$

where A = accumulated amount at the end of mt conversion periods, P = principal, r = nominal interest rate per year, m = number of conversion periods per year, & t = number of years.

a) $A = 1000\left(1 + \frac{4/100}{1}\right)^{1 \cdot 8} = \$1,368.57$

b) $A = 2500\left(1 + \frac{4/100}{2}\right)^{2 \cdot 10} = \$3714.87$

c) $A = 150,000\left(1 + \frac{4/100}{12}\right)^{12 \cdot 4} = \$175,979.80$