HW6 - Solutions.

(1) (a) $700 = \frac{0.5 \times 200 \times m_1}{(2)^2}$ $\quad 700 = \frac{0.5 \times 200}{4} m_1$ $\quad \frac{700}{25} = \frac{\cancel{25} m_1}{\cancel{25}}$

$\boxed{m_1 = 28}$

(b) $\frac{2400}{600} = \frac{\cancel{600}(1 + r \times 10)}{\cancel{600}}$ $\quad 4 = 1 + 10r$ $\quad 3 = 10r$ $\quad \boxed{r = 0.3}$

(2) (a) $\frac{E}{c^2} = \frac{m \cancel{c^2}}{\cancel{c^2}}$ $\quad \boxed{m = \frac{E}{c^2}}$

(b) $\frac{A}{P} = \frac{\cancel{P}(1 + rt)}{\cancel{P}}$ $\quad \frac{A}{P} = 1 + rt$ $\quad \frac{1}{t}\left(\frac{A}{P} - 1\right) = \frac{r \cancel{t}}{\cancel{t}}$ $\quad \boxed{r = \frac{1}{t}\left(\frac{A}{P} - 1\right)}$

(3) $P_n = P(1 + r)^n$ $\quad n = 5$ $\quad P = 7.00\$$ $\quad r = 0.031$

$P_n = 7(1 + 0.031)^5 = \boxed{8.15\$}$

(4) (a) $5x - 2 = 12$ $\quad 5x = 14$ $\quad \boxed{x = 14/5}$

(b) $x + 5 = 3x - 1$ $\quad 6 = 2x$ $\quad \boxed{x = 3}$

(5) yearly fee \$90 save 15% of the price

? amount spent s.t. savings = 90\$.

x = total amount spent

savings: 15% of x $\quad 0.15x$

$0.15x = 90$ $\quad x = \frac{90}{0.15} = \boxed{600\$ \text{ total amount}}$