7.5 Pg 375

2. $P_0 = 500$ $r = 7\%$ $t = 3$

$$P(t) = 500e^{.07t}$$

$$P(3) = 500e^{.07(3)}$$

$$= \$616.84$$

5. $t = 10$ $P_0 = 2000$ $r = 9\%$

a) $A = 2000\left(1 + \frac{.09}{4}\right)^{4(10)}$

$A = 2000(1.0225)^{40}$

$= 4870.38$

b) $A = 2000\left(1 + \frac{.09}{12}\right)^{12(10)}$

$= 2000(1.0075)^{120}$

$= 4902.71$

c) $A = 2000e^{.09(10)}$

$= \$4919.21$

4. $P_0 = 4000$ $A = 8000$ $r = 7\%$

$$A = P_0 e^{rt}$$

$$8000 = 4000 e^{.07t}$$

$$2 = e^{.07t}$$

$$\ln 2 = \ln e^{.07t}$$

$$\ln 2 = .07t$$

$$\frac{\ln 2}{.07} = t$$

$t = 9.9$ years.

7.5 Pg 376

23. $\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^{6n}$

$= \left[\lim_{n\to\infty}\left(1+\frac{1}{n}\right)^{n}\right]^{6}$

$= [e]^{6}$

$= e^{6}$

24. $\lim_{n\to\infty}\left(1+\frac{3}{n}\right)^{n}$

$e^{x} = \lim_{n\to\infty}\left(1+\frac{x}{n}\right)^{n}$

$\therefore \lim_{n\to\infty}\left(1+\frac{3}{n}\right)^{n} = e^{3}$

25 $\lim_{n\to\infty}\left(1+\frac{3}{n}\right)^{2n}$

$= \left[\lim_{n\to\infty}\left(1+\frac{3}{n}\right)^{n}\right]^{2}$

$= \left[e^{3}\right]^{2}$

$= e^{6}$

26. $\lim_{n\to\infty}\left(1+\frac{1}{4n}\right)^{12n}$

$= \left[\lim_{n\to\infty}\left(1+\frac{\frac{1}{4}}{n}\right)^{n}\right]^{12}$

$= \left(e^{\frac{1}{4}}\right)^{12}$

$= e^{3}$