Box 7

1. $y = 7322564(1.009)^t$ $(.9\% = .009)$

2. $y = 7322564(1.009)^{20}$ $(2010 - 1990 = 20 \text{ yrs})$
$y \approx 8,759,645$ people

3. $A = 1000\left(1 + \frac{.08}{4}\right)^{4(5)}$
$A = \$1485.95$

4. $A = 1000\left(1 + \frac{.08}{4}\right)^{4(35)}$
$A = \$15,996.47$

5. $y = 96,000(1.04)^{10}$
$y = \$142,103.45$

6. $y = 40,000(0.9)^t$ $(1 - .10 = 0.9)$

7. $y = 60000(0.9)^6$
$y = \$31,886.46$

8. $y = 500(0.9)^{15}$ $(x = \text{weeks})$
$y = \$102.95$

9. $y = 9000(0.85)^5$
$y = \$3993.35$

Box 9

1) $y = 35(0.57)^x$

a) decay ($b < 1$)

b) 43% ($1 - .43 = .57$)

c) 35

d) $y = 35(0.57)^5$

$y = 35(.0601\ldots)$

$\boxed{y = 2.11}$

2) A) $y = 1.3^x$

$a = 1$

growth = 1.3

rate = 30%

B) $y = 9(3)^x$

$a = 9$

growth = 3

rate = tripling

C) $y = 1.4(1.03)^x$

$a = 1.4$

growth = 1.03

rate = 3%

D) $y = 1.9(0.2)^x$

$a = 1.9$

decay = 0.2

rate = 80%

E) $y = 0.91^x$

$a = 1$

decay = 0.91

rate = 9%

F) $y = 16(0.75)^x$

$a = 16$

decay = 0.75

rate = 25%

3) a) $y = 2550(1.01625)^t$

b) $y = 2550(1.01625)^6$

$\boxed{y = \$3668.71}$

4) a) $y = 12329(0.915)^t$

b) $y = 12329(0.915)^4 = \boxed{\$8641.96}$

5) $y = 50{,}000{,}000(0.93)^x$ (x = hours)

a) 1 day = 24 hrs.

$y = 50{,}000{,}000(0.93)^{24}$

$\boxed{y \approx 8{,}761{,}143 \text{ bacteria}}$

b) 1 week = 168 hrs.

$y = 50000000(0.93)^{168}$

$\boxed{y \approx 254 \text{ bacteria}}$

c) 3 hours

$y = 50000000(0.93)^3$

$\boxed{y = 40{,}217{,}850 \text{ bacteria}}$