

§9C. EXPONENTIAL MODELING

27.a $Q = 60000 \times 1.025^t$

28.a $Q = 800 \times 1.03^t$, $t = \# \text{ YEARS AFTER } 2001$

29.a $Q = 1000000 \times 0.93^t$

30.a $Q = 10000 \times 0.997^t$, $t = \# \text{ MONTHS LATER}$

31.a $Q = 175000 \times 1.05^t$, $t = \# \text{ YRS AFTER } 2007$

32.a $Q = 8 \times 0.85^t$, $t = \# \text{ HOURS AFTER DOSE OF DRUG IS GIVEN}$

33.a $Q = 2000 \times 1.05^t$

34.a $Q = 100000 \times 0.5^t$

35. 1 yr = 12 mos.

$$1.015^{12} = 1.1956 \rightarrow \boxed{\text{INCR BY } 19.56\%}$$

36. 1 yr = 12 mos

$$0.99^{12} = 0.8864 \rightarrow \text{DECR. BY } 100 - 88.64 = \boxed{11.36\%}$$

37. $1.8^{12} = 1156.8$

$$\frac{-1.0}{1155.8} \rightarrow \boxed{115580\% \text{ INCR.}}$$

38.

1 yr: $1.9^{12} = 2213.31$

$$\frac{-1.00}{2212.31}$$

→ INCR. BY 221,231%

$\frac{1}{30}$ ← 1 DAY $\approx \frac{1}{30}$ OF A MONTH

1 DAY: 1.9

↳ $= 1.02$

$$\frac{-1.00}{.02}$$

→ INCR BY 2%

41.

(a) 12 Hour later: $Q = 50 \times 0.5^{12/36} = 39.69 \text{ mg}$

(b)

t	Q
0	50
36	25
72	12.5
108	6.25
144	3.125

10% of 50
10% MEANS 5 mg

GUESS: 120 HRS

$$50 \times 0.5^{120/36} = .0992$$

↳ 9.92%