

APPLIED FINITE MATHEMATICS  
3<sup>rd</sup> ed 2016 Sekhon/Bloom

Answers to Odd Numbered Homework  
Problems Sections 5.1, 5.3, 5.5

- 5.1 1) exponential 3) linear 5) linear 7) power  
9) decay 11) growth  
13)  $y = 127(.7046)^t$   $r = -.2954$  29.54% annual decay rate  
15)  $y = 17250(1.2712)^t$   $r = .2712$  27.12% annual growth rate  
17)  $y = 350000 + 7000t$  At  $t=5$   $y = \$385000$   
19)  $y = 50000(.94)^t$  At  $t=10$   $y = \$26930.76$   
21)  $y = 200 + 10t$  At  $t=7$   $y = 270$   
23)  $y = 300(.93)^t$  At  $t=6$   $y = 194$   
25)  $y = 400e^{-.26t}$  At  $t=7$   $y = 2469$   
27)  $y = 4000e^{-.12t}$  At  $t=10$   $y = 1265$

- 5.3 1)  $\log_3 81 = 4$  3)  $\log_5 .04 = -2$   
7)  $\log_{16} 2 = \frac{1}{4}$  9)  $5^4 = 625$  9)  $11^3 = 1331$   
11)  $64^{1/3} = 4$  13)  $\log_5 15625 = x$  15)  $5^x = 125$   
17)  $10^4 = y$  19)  $x = e^{-1}$  or  $x = \frac{1}{e}$  (equivalent answers)  
21)  $x = 5^3$  so  $x = 125$  23)  $x = 10^{-3}$  so  $x = \frac{1}{1000} = .001$   
25)  $x = 25^{1/2}$  so  $x = \sqrt{25} = 5$   
27)  $1/3$  29) 10 31) 1.30103 33) 1.06471  
35) 2.58496 37) 25.676548

5.4 #6-11 Matching Graphs

- 6)  $y = 3e^{-.6x}$  7)  $y = \log_2 x$  8)  $y = 3(2^x)$   
9)  $y = \log_{1/2} x$  10)  $y = 5e^{-.8x}$  11)  $y = 5(.4^x)$

5.5 ① a)  $y = 20000(1.05^t)$  b) At  $t = 12$ ,  $y = \$35917.13$

c)  $y = 30000$  at  $t = 8.31$  years

②  $a = \$55974.33$

③  $y = 5000$  at  $t = 13.81$  months

④  $y = 100000$  at  $t = 9.35$  years

⑤  $r = .0227$  2.27% annual growth rate

⑥  $r = -.0543$  5.43% annual decay rate

⑬ a)  $y = 7900(1.603)^t$

b)  $y = 4567 e^{-.4005t}$

c)  $y = 18720 e^{.38526t}$

d)  $y = 1200(.925)^t$

## 5.6 Review Problems

- ① a)  $a = \$45503$  b)  $t = 9.6$  years c)  $\$35202$
- ② a)  $y = 40000(.973)^t$  b)  $\$30422$  c)  $t = 25.32$  years
- ③ a)  $y = 25000(1.064)^t$  b)  $\$86451.51$
- ④ a)  $a = 146512$  b)  $t = 16.96$  years c)  $188500$
- ⑤ a)  $2998$  b)  $t = 7.2$  years
- ⑥ a)  $r = -.2323$  Hourly decay rate is  $23.23\%$   
b)  $t = 3.31$  hours c)  $36.2$  mg
- ⑦  $r = .165$  Annual growth rate is  $16.5\%$
- ⑧ a)  $y = 375000e^{.11778t}$   
b)  $y = 5400(1.13542)^t$   
c)  $y = 230(.53794)^t$   
d)  $y = 3600e^{-.8675t}$