

# HW35

p255 #1-6

AZ

1. a)  $f(5) = 4.753(0.9421)^5$   
 $f(5) = 3.53$

b)  $g(14) = 238(1.37)^4$   
 $g(14) = 19,528.32$

c)  $h(24) = 47.3(0.835)^{24} + 22.3$   
 $h(24) = \cancel{10.002} 22.92$

d)  $j(37) = 225(1.0825)^{37-3}$   
 $j(37) = 3,332.2$

2. a) 16, 12, 9  
 $y = 16(0.75)^x$

b) 24, 36, 54  
 $y = 24(1.5)^x$

3. a) 125, 75, 45  
 $u_0 = 125$   
 $u_n = 0.6 \cdot u_{n-1}$   
 $n \geq 1$

b) 3, 6, 12  
 $u_0 = 3$   
 $u_n = 2 \cdot u_{n-1}$   
 $n \geq 1$

4. a)  $\frac{36}{48} = 0.75$ , 25% decay

b)  $\frac{72}{54} = 1.33$ , 33% growth

c)  $\frac{47}{50} = 0.94$ , 6% decay

d)  $\frac{50}{47} = 1.06$ , 6% growth

5. a)  $u_0 = 1.211$   
 $u_n = 1.015 \cdot u_{n-1}$   
 $n \geq 1$

b)

Year	0	1	2	3	4	5	6	7
pop.	1.211	1.229	1.248	1.266	1.285	1.305	1.324	1.344

2002

c)  $y \rightarrow$  population,  $x \rightarrow$  year  
 $y = 1.211(1.015)^x$

d) 2006,  $x = 11$   
 $y = 1.211(1.015)^{11} = 1.426$   
 It was an over estimate by the equation.

6. a)  $x \rightarrow$  day  $y \rightarrow$  height  
 $y = 2.56(2.5)^x$   
 $y = 2.56(2.5)^6 = 625 \text{ cm}$   
 $y = 2.56(2.5)^5 = 250 \text{ cm}$

b)  $x = 3.5$   
 $y = 2.56(2.5)^{3.5} = 63.25 \checkmark$   
 0.5 because 12 more hrs, half a day.

c) 4 hrs is  $\frac{1}{6}$  of a day  
 $x = 6\frac{1}{6}$   
 $y = 2.56(2.5)^{6\frac{1}{6}} = 728.12 \text{ cm}$

d)  $5.12 = 2.56(2.5)^x$   
 $2 = 2.5^x$  graph  
 $x \approx 0.76$  hr days

e) 1 km = 100,000 cm  
 $100,000 = 2.56(2.5)^x$  graph  
 $x \approx 11.5$  days