Are there any Homework Questions you would like to see on the board?

Last day's work: pp. 261-262 # 1 – 8 $_{\text{C}}$

26 (hart

6f

Today's Homework Practice includes:

pp. 267-269 #(1 – 17)ace

p. 270 # 1 – 7

17a

Work Ahead to: pp. 251-253 #(1,2)cd, 4c, 5cd, 10 [12 – 14] (Optional Wkst 4.6 Extra Practice)

Hwk from 4.7 pp. 261-262 (last class)

1. Solve each exponential equation. Express answers to the nearest hundredth of a unit.

a)
$$A = 250(1.05)^{10}$$

b)
$$P = 9000 \left(\frac{1}{2}\right)^8$$

c)
$$500 = N_0(1.25)^{1.25}$$

d)
$$625 = P(0.71)^9$$

2. Complete the table.

	Function	Exponential Growth or Decay?	Initial Value	Growth or Decay Rate	
a)	$V(t) = 20(1.02)^t$				
b)	$P(n) = (0.8)^n$	decay	1	20%	- h=
c)	$A(x) = 0.5(3)^x$	0			6
d)	$Q(w) = 600 \left(\frac{5}{8}\right)^{w}$	decay	600	3=37.5 %	b=1±
		5-1-	- (i.b=1-
		r= 1- \frac{5}{8}			0.8 = 1-
		8			0.8- (=
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- 3. The growth in population of a small town since 1996 is given by the function $P(n) = 1250(1.03)^n$.
 - a) What is the initial population? Explain how you know.
 - b) What is the growth rate? Explain how you know.
 - c) Determine the population in the year 2007.
 - d) In which year does the population reach 2000 people?
- 4. A computer loses its value each month after it is purchased. Its value as a function of time, in months, is modelled by $V(m) = 1500(0.95)^m$.
 - What is the initial value of the computer? Explain how you know.
 - What is the rate of depreciation? Explain how you know.
 - c) Determine the value of the computer after 2 years.
 - In which month after it is purchased does the computer's worth fall below \$900?

a)
$$V(0) = 1500 (0.95)^{\circ}$$

$$= 1500(1)$$

$$= 1500$$

$$= 1500 (0.95)^{\circ}$$

$$= 1500 (0.95)^{$$

b)
$$b = 0.95$$
 $\therefore r = 0.05$
 $\Rightarrow b = 1 + r$
 $\Rightarrow b =$

70.0=

- 5. In 1990, a sum of \$1000 is invested at a rate of 6% per year for 15 years.
 - What is the growth rate?
 - What is the initial amount?
 - c) How many growth periods are there?
 - d) Write an equation that models the growth of the investment, and use it to determine the value of the investment after 15 years.
- 6. A species of bacteria has a population of 500 at noon. It doubles every 10 h.
- The function that models the growth of the population, P, at any hour, t, is

 $d) t = 12 : p(12) = 500(2^{\frac{12}{10}})$ $P(t) = 500 \left(2^{\frac{t}{10}}\right).$

a) Why is the exponent $\frac{\iota}{10}$?

- b) Why is the base 2?
- c) Why is the multiplier 500?
- d) Determine the population at midnight.
- Determine the population at noon the next day.
- f) Determine the time at which the population first exceeds 2000.

midnight is $\leq p(t) = 2000$ $3000 = 500 \left(3^{\frac{1}{6}} \right)$ =2639.0 $\frac{2000}{100} = 2^{\frac{10}{100}}$ (=) to a = 2 f = 2 f = 20 f =

A=BX

V= log 81

= 4

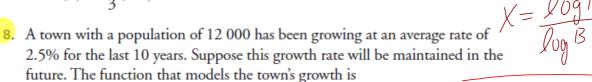
7. Which of these functions describe exponential decay? Explain.

a)
$$g(x) = -4(3)^x$$

b)
$$h(x) = 0.8(1.2)^x$$

c)
$$j(x) = 3(0.8)^{2x}$$

d)
$$k(x) = \frac{1}{3}(0.9)^{\frac{x}{2}}$$



$$P(n) = 12(1.025^n)$$

where P(n) represents the population (in thousands) and n is the number of years from now.

Determine the population of the town in 10 years.

d) What are the domain and range of the function?

a)
$$N = 10$$

 $P(10) = 12(1.025^{10})$
 $= 15.3610$
 $= 15.361.0$
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function?

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b) p(n) = a4 \\
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- p. 269 17. The population of a city is growing at an average rate of 3% per year. In 1990, the population was 45 000.
 - Write an equation that models the growth of the city. Explain what each part of the equation represents.
 - b) Use your equation to determine the population of the city in 2007.
 - c) Determine the year during which the population will have doubled.
 - d) Suppose the population took only 10 years to double. What growth rate would be required for this to have happened?