

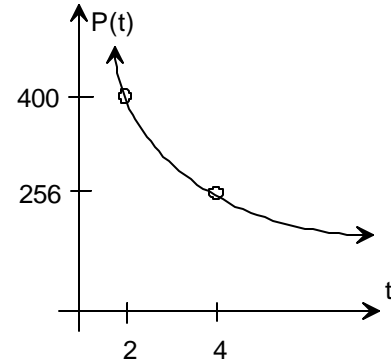
MATH 105

NAME: _____

Test #2: Chapter 3, 4.1, 4.2, 4.3

Point values in parentheses.

1. (7) A portion of the graph of the exponential function $P(t)$ is below. Find a formula for $P(t)$.



2. (7) Sales of cassette tapes of music decreased by 7% per year over a period of 5 years. By what total percent did sales of cassette tapes of music decrease during this time period? Use two decimal places after the percentage.

3. (10) Let $P(x)$ represent the profit in dollars made by selling x television sets per week. Suppose your current level of sales is n television sets per week. Using English and not math symbols, write what each of the following means.

a. $P(n) + 1000$

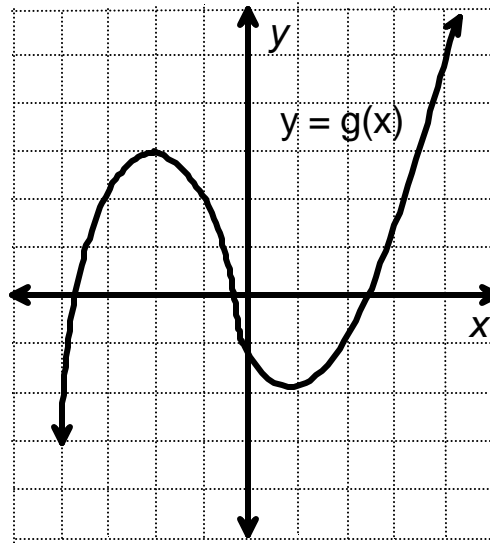
b. $P(n + 10)$

4. (9) Use the graph of $g(x)$ in the figure to answer the following questions (assume each grid mark is 1 unit).

a. Evaluate $g(-2)$

b. Solve $g(x) = 2$.

c. Evaluate $g^{-1}(5)$.



5. (5) What is $\sqrt{x^2}$ equal to?

6. (7) In six years, an investment grew by 12%. Assuming it grew at the same rate each year, what is the annual growth rate of the investment? Use two decimal places after the percentage.

7. (8) Let $f(x) = \sqrt{x^2 - 8x + 31} - 4$.

a. Find $f(0)$.

b. Solve $f(x) = 0$.

8. (8) Find the domain and range of the function $f(x) = \frac{1}{x^2 - 5x + 6}$.

9. (8) Find the domain and range of the function $g(x) = \sqrt{3x - 10}$.

10. (12) The U.S. population in 1996 was about 273.6 million. Assume that the population increases at the rate of 1.3% (0.013) per year.

a. Write a formula for the population $P(t)$ of the U.S. in millions, where t is the number of years since 1996.

b. What will be the population of the U.S. in the year 2020 according to this model?

c. In what year will the population reach 300 million?

11. (7) A bus tour to New York City charges \$400 plus an additional \$50 per person up to and including the first 20 people and \$25 per person for each of the passengers above 20 people. The bus capacity is 40 people.

Express C , the cost of the trip in dollars as a function of n , the number of people taking the tour.

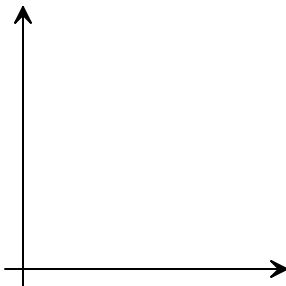
12. (12) Sketch a graph that describes each of the following.

a. The child's temperature is still rising, but the medicine seems to be taking effect.

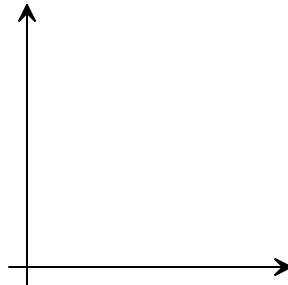
b. The speed of computer chips is increasing at an ever increasing rate.

c. The price of a 10 minute long distance call isn't decreasing as quickly as it used to be.

a.



b.



c.

