Name _____ Date_____

Midterm Review: Chapters 1-7 Algebra

1. Determine the domain **and** range for each function.

   a) $g(x) = \sqrt{x} - 1$

   b) $h(x) = |x + 4|$

   c) $f(x) = \sqrt{x} + 2$

   d) $p(x) = |x| - 5$

   e) $m(x) = -\sqrt{x} - 8$

   f) $n(x) = -|x| + 6$

2. State the domain **and** range. {(7,3), (-8,2), (9,0), (5,17)}

3. Given the relation: {(4,-2), (6,-2), (-4,1), (6,5)}, determine if this is a function or not. Justify your answer.

4. Find the solution to each system of equations.

   a) $3x + 2y = 13$
      $6x - 3y = 33$

   b) $4x - 5y = -28$
      $3x + 2y = 2$

5. Sarah only has dimes, d, and quarters, q, in her piggy bank. There is a total of $12.50 and 140 coins in the piggy bank. Write a system of equations that could be used to determine how many of each type coin she has in the piggy bank.

6. Daniel bought a boat for $48,000. The boat depreciates in value by 3.6% each year. How much will the boat be worth to the nearest cent in 9 years?

7. In the function $g(x) = 960(1.08)^t$, explain what 960 and 1.08 represent.

8. In the function $h(x) = 2{,}400(0.77)^t$, explain what 2,400 and 0.77 represent.

9. Given $f(x) = 20(25)^t$ and $g(x) = 20(5)^{2t}$, determine if the two functions are equivalent. Justify your answer.

10. Evaluate $f(x) = 64(\frac{1}{2})^x$ for $f(4)$.

11. Solve algebraically.
    a) $5(x - 6) \geq -20$ b) $-2(x + 4) > 14$ c) $-18 < -3(x + 2) + 12$

12. Determine if each is rational or irrational.
    a) $\frac{1}{2} + \sqrt{7}$ b) $\frac{1}{\sqrt{9}} - \frac{2}{3}$ c) $\frac{1}{\sqrt{4}} + 0.6$

13. Find the sum of $x^2 + 9x - 15$ and $3x^2 - 9x + 8$.

14. Find the difference of $2x^2 - 6x + 11$ and $4x^2 - x - 13$.

15. From $9x^2 + 5x - 6$, subtract $x^2 - 5x - 6$.

16. Subtract $7x^2 - 10x + 3$ from $5x^2 + x - 4$.

17. Find the area of a rectangle in terms of x when the length is represented by $(3x + 7)$ and the width is represented by $(2x - 9)$.

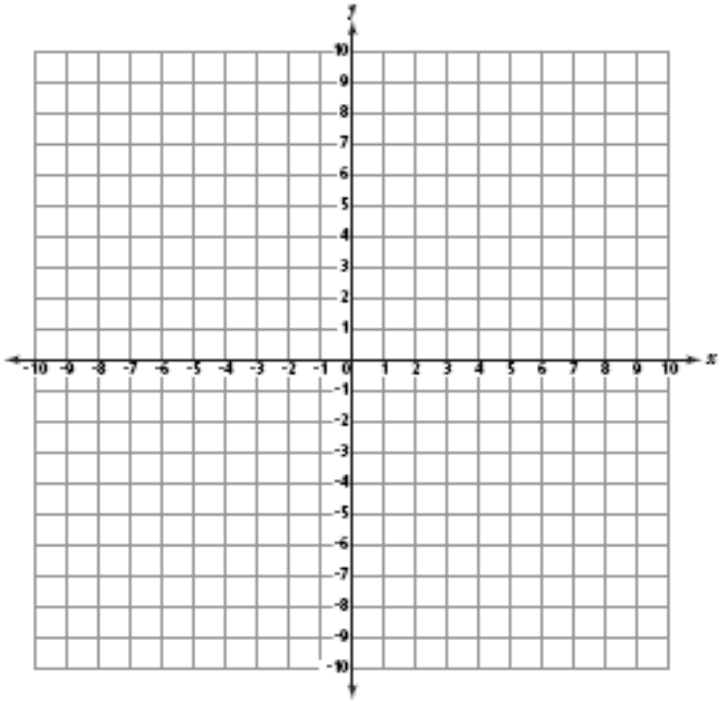
18. Solve for y and determine which function is not equivalent to the others.
    a) $8y - 16 = 4x$ b) $9y - 3x = 18$ c) $7x + 28 = 14y$

19. Find the average rate of change.

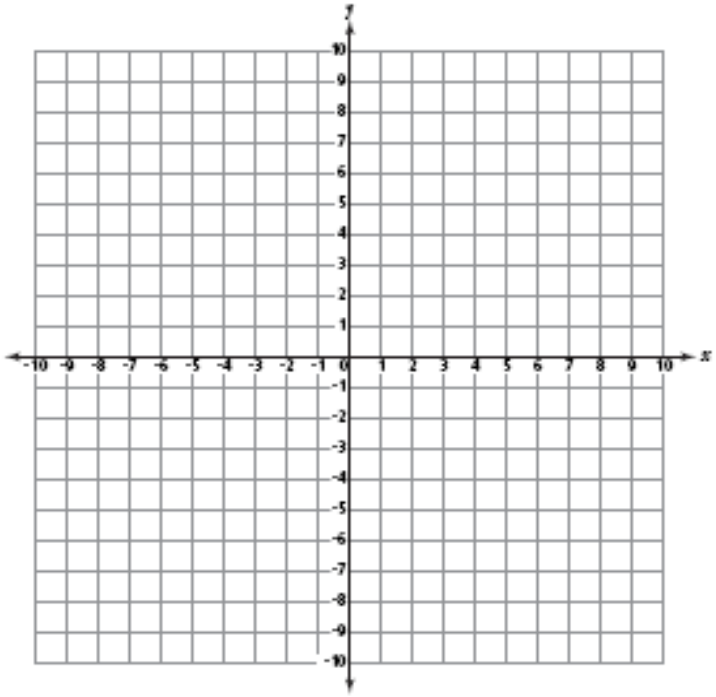
x	10	12	14	16	18
f(x)	1.2	1.6	2.0	2.4	2.8

20. Graph each function.

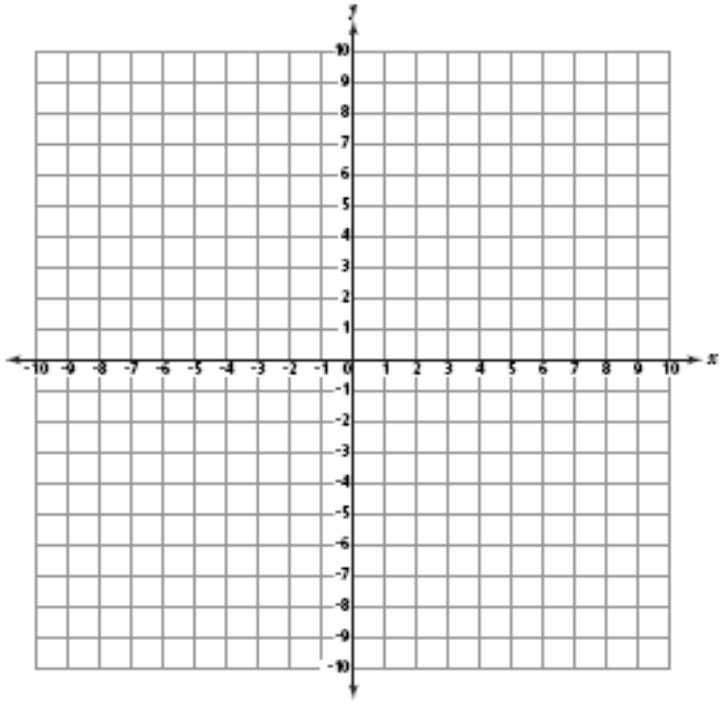
a) $y = |x| - 4$



b) $y \leq \frac{3}{4}x + 3$



c) $y = \sqrt{x} - 3$



d) $y - 2x > 2$

$y \leq -4x - 3$

State a point in the solution set.