MCF3M **Unit 1 Review**

Topics on this test will include:

- Expanding
- Solving Equations
- Definition of a Function
- Function Notation
- Domain and Range
- Properties of Quadratic functions (1st/2nd differences, parts of the parabola, etc.)
- Graphing a Parabola from Vertex Form
- Finding the Equation of a Parabola in Vertex Form

Review Questions

1. Expand and simplify each of the following.

   a) $3x(x-3)$ b) $(x+5)(x-1)$ c) $2(x-1)(x+3)$ d) $(2x+3)^2$

2. Solve each of the following.

a) $3n - 12 = 8n + 13$ b) $5(x-4) = 2x - (6-x)$ c) $x^2 - 1 = 24$

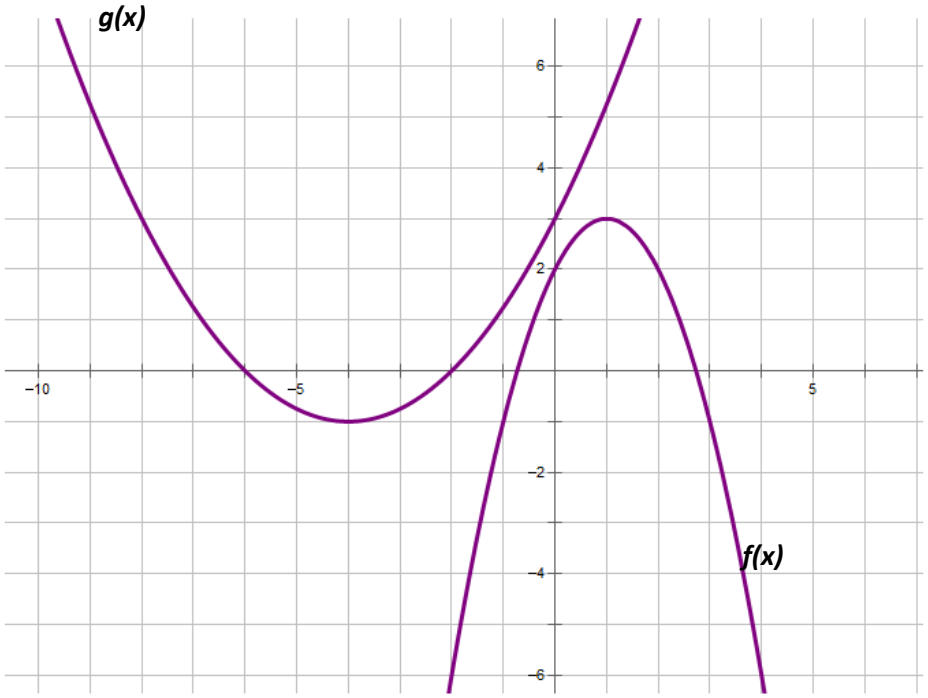
d) $\frac{1}{2}x - \frac{2}{3} = 2 - \frac{5}{6}x$ e) $\frac{2x-3}{4} = \frac{x+6}{3}$

3. Text page 54 #1 – 3, 5, 8 and page 56 #3, 4, 5, 6, 10, 12, 13

4. Complete the following table. Graph each function on graph paper.

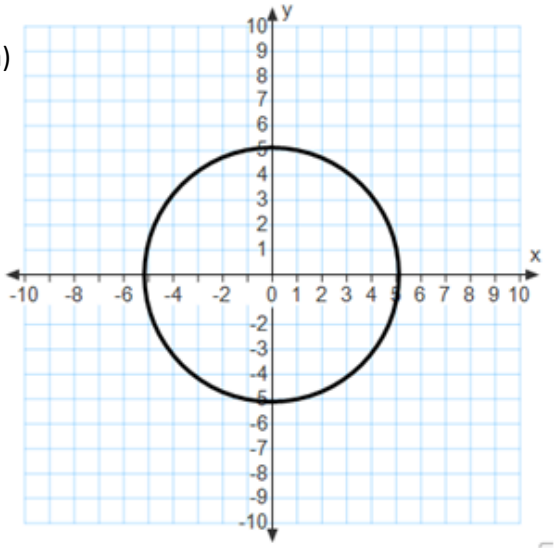
Equation	Vertex	Direction of Opening	Step Pattern	Equation of Axis of Symmetry	RANGE
a) $f(x) = -(x-4)^2 + 3$					
b) $g(x) = 0.5(x-1)^2 - 4$					
c) $h(x) = -2(x+3)^2$					

5. Find the equation of each graph below. Once you have an equation, check your answer by substituting in a point.

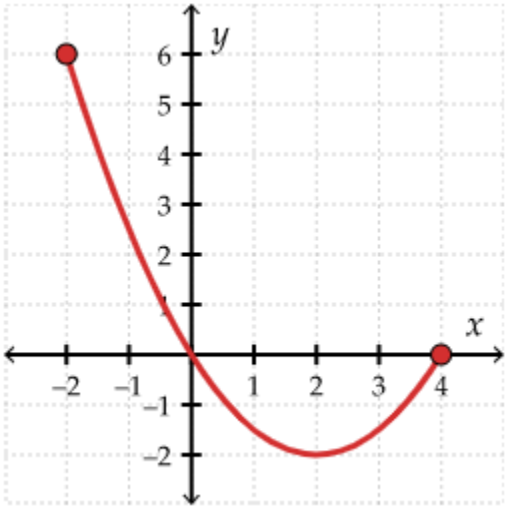


6. Find the domain and range of the following graphs. Does the graph represent a function?

a)



b)



Answers

1. a) $3x^2 - 9x$ b) $x^2 + 4x - 5$ c) $2x^2 + 4x - 6$ d) $4x^2 + 12x + 9$ **2.** a) n=-5 b) x=7 c) $x = \pm 5$ d) x = 2 e) x = 33/2

3. *answers in textbook* **4.** a) (4, 3), down, 1,3,5,7..., x=4, $\{f(x) \epsilon R | f(x) \leq 3\}$ b) (1, -4), up, 0.5, 1.5, 2.5... x = 1, $\{g(x) \epsilon R | g(x) \geq -4\}$ c) (-3,0), down, 2,6,10... x=-3, $\{h(x) \epsilon R | f(x) \leq 0\}$

5. $f(x) = -(x-1)^2 + 3$ $g(x) = 0.25(x+4)^2 - 1$

6. a) NOT a function. D:$\{x \in R | -5 \leq x \leq 5\}$ R: $\{y \in R | -5 \leq y \leq 5\}$ b) Is a function: D:$\{x \in R | -2 \leq x \leq 4\}$ R: $\{y \in R | -2 \leq y \leq 6\}$