

HW 0.3

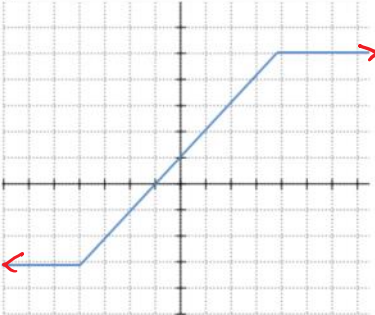
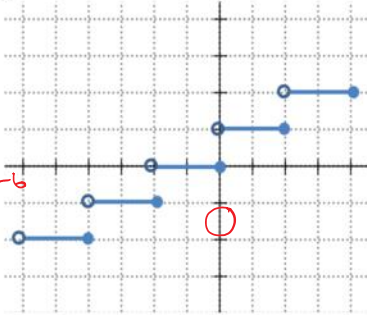

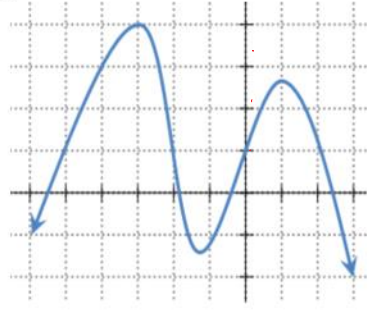
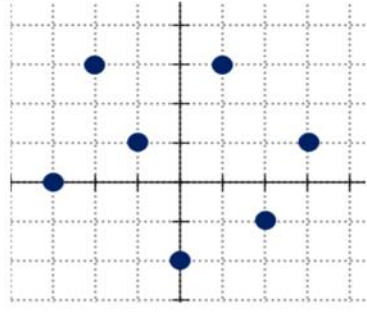
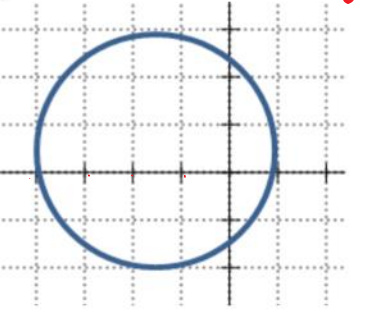
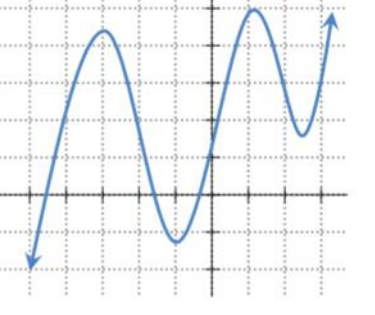
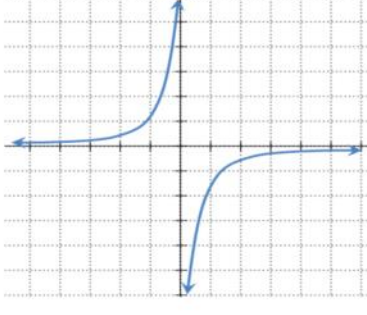
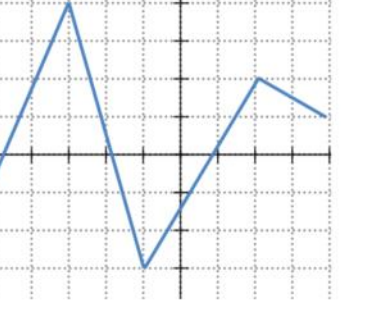
September 16, 2016 12:36 PM

Name: _____

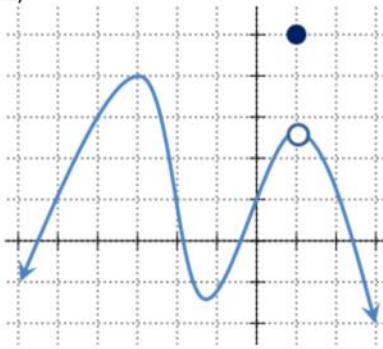
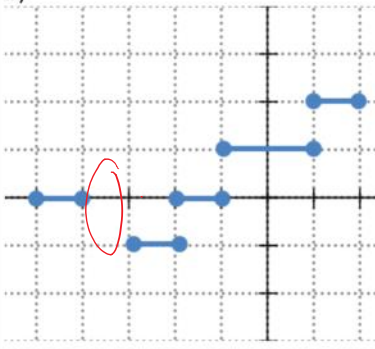
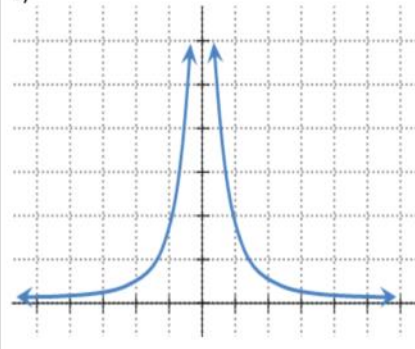
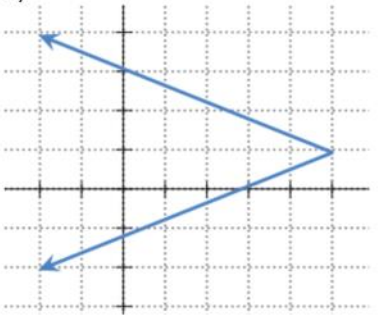
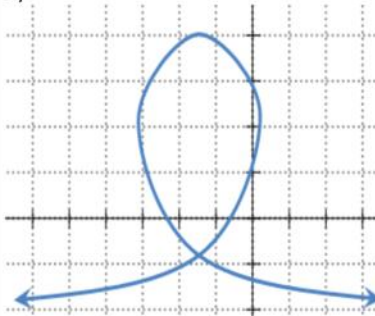
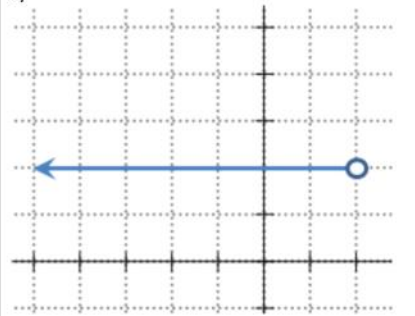
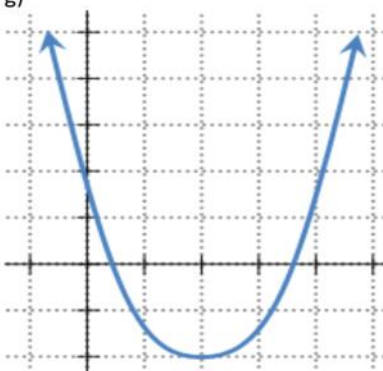
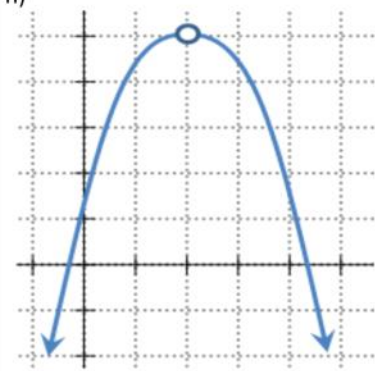
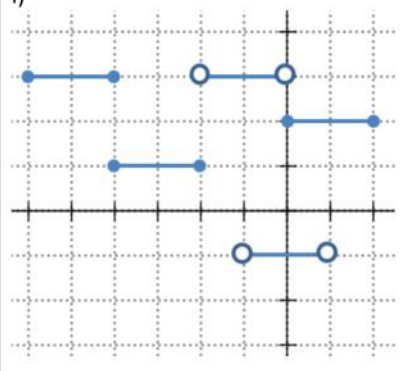
Date: _____

Math 9 honors: Assignment 1.3 Introduction to Domain and Range

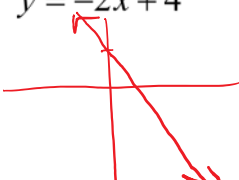


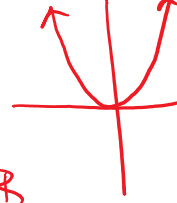
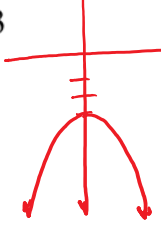
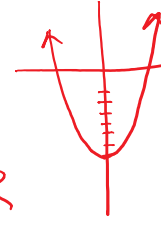
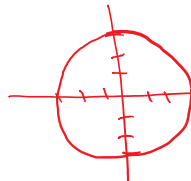
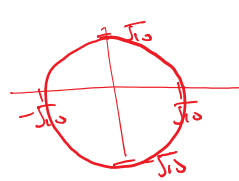
1. Given each of the following graphs, indicate the domain and range:

<p>a)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $-3 \leq y \leq 5$</p>	<p>b)</p>  <p>Domain: $-6 < x \leq 4$ Range: $y: \{-2, -1, 0, 1, 2\}$</p>	<p>c)</p>  <p>Domain: $5 \leq x < 0 \text{ or } 0 < x$ Range: $-5 \leq x; x \neq 0$ $-3 \leq y \leq 5; y \neq 1$</p>
<p>d)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \leq 4$</p>	<p>e)</p>  <p>Domain: $x: \{-3, -2, -1, 0, 1, 2, 3\}$ Range: $y: \{-2, -1, 0, 1, 3\}$</p>	<p>f)</p>  <p>Domain: $-4 \leq x \leq 1$ Range: $-2 \leq y \leq 3$</p>
<p>g)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \in \mathbb{R}$</p>	<p>h)</p>  <p>Domain: $x < 0 \text{ or } 0 < x$ Range: $y < 0 \text{ or } 0 < y$</p>	<p>i)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \leq 4$</p>

2. Indicate the domain and range for each of the following graphs:

<p>a)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \leq 4; y = 5$</p>	<p>b)</p>  <p>Domain: $-5 \leq x \leq -4; -3 \leq x \leq 2$ Range: $y: \{2, 1, 0, -1\}$</p>	<p>c)</p>  <p>Domain: $x \in \mathbb{R}; x \neq 0$ Range: $y > 0$</p>
<p>d)</p>  <p>Domain: $x \leq 5$ Range: $y \in \mathbb{R}$</p>	<p>e)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \leq 4$</p>	<p>f)</p>  <p>Domain: $x < 2$ Range: $y = 2$</p>
<p>g)</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \geq -2$</p>	<p>h)</p>  <p>Domain: $x \in \mathbb{R}; x \neq 2$ Range: $y < 5$</p>	<p>i)</p>  <p>Domain: $-6 \leq x \leq 2$ Range: $y \in \{-1, 1, 2, 3\}$</p>

3. Indicate the domain and range for each of the following equations. Draw a quick sketch of the graph with the space provided if necessary:

<p>a) $y = -2x + 4$</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \in \mathbb{R}$</p>	<p>b) $2x = 4$ $x = 2$</p>  <p>Domain: $x = 2$ Range: $y \in \mathbb{R}$</p>	<p>c) $y = 3x - 6$</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \geq 0$</p>
<p>d) $y = x^2$</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \geq 0$</p>	<p>e) $y = -x^2 - 3$</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \leq -3$</p>	<p>f) $y = x^2 - 7$</p>  <p>Domain: $x \in \mathbb{R}$ Range: $y \geq -7$</p>
<p>g) $y = \sqrt{x-3}$</p> <p>$x-3 \geq 0$ $x \geq 3$</p> <p>Domain: $x \geq 3$ Range: $y \geq 0$</p>	<p>h) $y = -\sqrt{x+2}$</p> <p>$x+2 \geq 0$ $x \geq -2$</p> <p>Domain: $x \geq -2$ Range: $y \leq 0$</p>	<p>i) $y = -\sqrt{-x+5}$</p> <p>$-x+5 \geq 0$ $5 \geq x$</p> <p>Domain: $x \leq 5$ Range: $y \leq 0$</p>
<p>j) $y = x^2 - 4$</p> <p>Domain: $x \in \mathbb{R}$ Range: $y \geq 0$</p>	<p>k) $y = \frac{1}{x-3}$</p> <p>$x-3 \neq 0$ $x \neq 3$</p> <p>Domain: $x \neq 3$ Range: $y \neq 0$</p>	<p>l) $y = \frac{1}{x^2 - 16}$</p> <p>$x^2 - 16 \neq 0$ $x \neq \pm 4$</p> <p>Domain: $x \neq \pm 4$ Range: $y \neq 0$</p>
<p>m) $3y - 4 = 0$</p> <p>$3y = 4$ $y = \frac{4}{3}$</p> <p>Domain: $x \in \mathbb{R}$ Range: $y = \frac{4}{3}$</p>	<p>n) $x^2 + y^2 = 9$</p>  <p>Domain: $-3 \leq x \leq 3$ Range: $-3 \leq y \leq 3$</p>	<p>o) $x^2 + y^2 = 10$</p>  <p>Domain: $-\sqrt{10} \leq x \leq \sqrt{10}$ Range: $-\sqrt{10} \leq y \leq \sqrt{10}$</p>

4. Given that $g(x)$ is a linear function such that $g(x) = 6$, what is the domain and range of the function?

horizontal line $y = 6$. $D: x \in \mathbb{R}$ $R: y = 6$.

5. Jacky went to Tim Hortons to buy donuts. They cost \$0.55 per donut. If "x" is the number of donuts purchased and "y" is the total cost, what is the domain of "x" and the range of "y"?

Domain: $x \in \{1, 2, 3, 4, 5, \dots, n\}$

Range: $y = n(0.55)$ $\{n: 1, 2, 3, 4, 5, \dots, n\}$

6. Susan took a taxi to go home. The cost "C" of the taxi was 1.75 per km and a fixed cost of \$5.00. What is the domain and range of this scenario?

Domain: "Distance". $0 \leq D$.

Range: Cost $C = 5.00 + 1.75n$ $\{n: 1, 2, 3, 4, 5, \dots, n\}$

7. The fuel efficiency of a Toyota Camry is about 700 km per 70 L of gasoline. If "D" is the number of kilometers driven and "L" is the Litres of gasoline required, what is the domain and range of this scenario?

$D: 0 \leq x \leq 700 \text{ km}$

$R: 0 \leq y \leq 70 \text{ L}$.

8. Janet is going to the PNE fair. Tickets cost \$5 for kids between ages 8 to 13, \$15 for ages between 14 to 65, \$12 for seniors above 65 years of age, and kids under 7 are for free. What is the domain and range of this scenario?

$D: \text{"ages"}: 8 \leq x$

$R: y \in \{\$5, \$15, \$12\}$.

9. Given the functions $f(x) = 4x - 2$ and $g(x) = x^2$. If the domain of $f(x)$ are all real numbers, then what is the domain and range of $g(f(x))$? What is the domain and range of $f(g(x))$?

$g(f(x)) = (4x - 2)^2$. $f(g(x)) = 4x^2 - 2$.

$D: x \in \mathbb{R}$

$D: x \in \mathbb{R}$

$R: y \geq 0$.

$R: y \geq -2$.

10. Given the functions $f(x) = x^2 + 2$ and $g(x) = \sqrt{x+2}$.

a. Find the domain and range of $g(f(x)) = \sqrt{x^2 + 4}$.

$$D: x^2 + 4 \geq 0 \quad R: y \geq 0 \\ x \in \mathbb{R}$$

b. Find the domain range of $f(g(x)) = (\sqrt{x+2})^2 + 2$.

$$D: x \geq -2 \quad R: y \geq 2$$

11. Given the functions $f(x) = \sqrt{x^2 - 1}$ and $g(x) = \sqrt{x - 2}$.

a. Find the domain and range of $g(f(x))$?

b. Find the domain range of $f(g(x))$?

12. Given the functions $f(x) = \frac{3x}{x-1}$ and $g(x) = \frac{2}{x}$.

a. Find the domain and range of $g(f(x))$?

b. Find the domain range of $f(g(x))$?