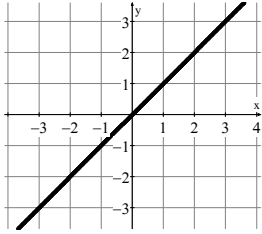
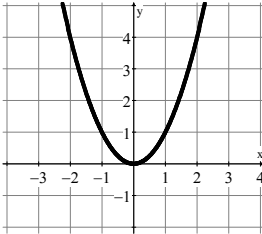
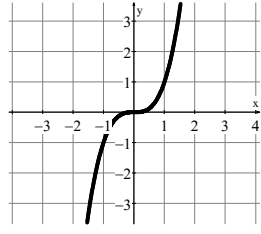
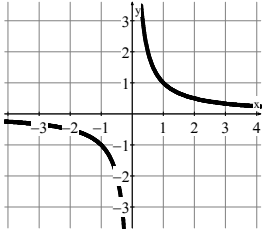
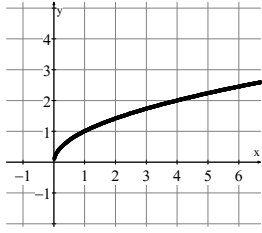
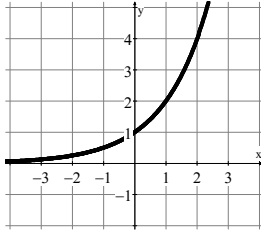
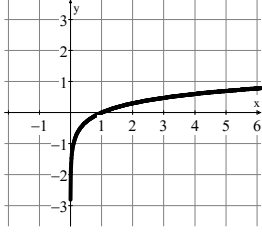
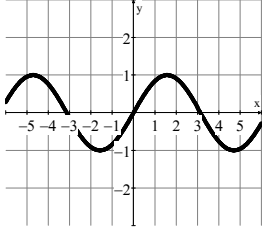
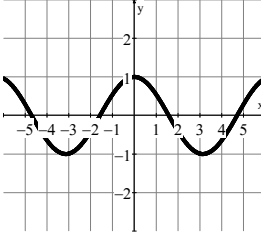
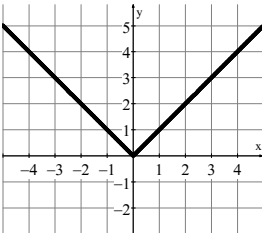
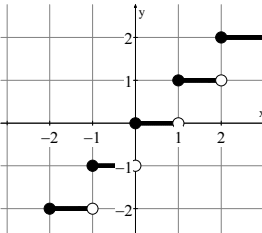
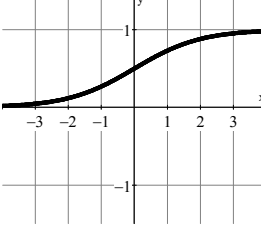


2.2 Domain & Range (Graphs) Name: _____

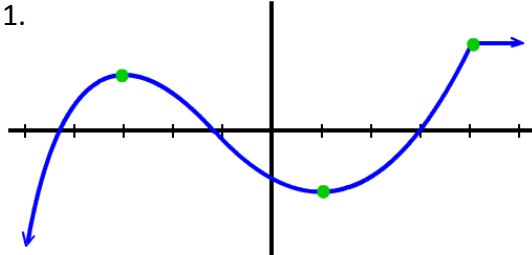
12 Basic Functions:

<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>
<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>
<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>
<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>	<p style="text-align: center;">Function</p>  <p style="text-align: center;">$f(x) =$</p>

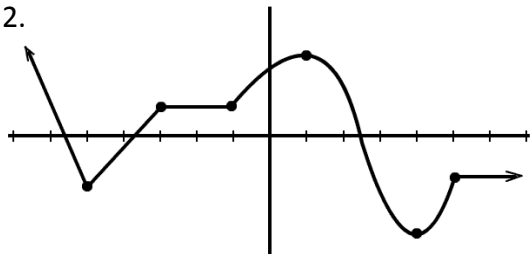
2.2 Domain & Range (Graphs)

Write your questions and thoughts here!

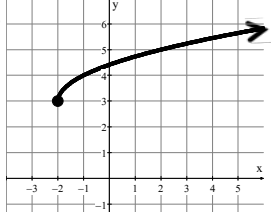
Increasing/Decreasing Functions:

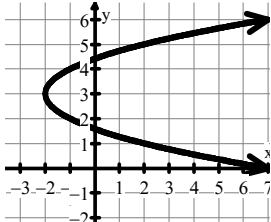
1.  The graph is increasing on: _____ The graph is decreasing on: _____
The graph is constant on: _____



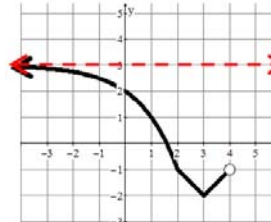
2.  The graph is increasing on: _____ The graph is decreasing on: _____
The graph is constant on: _____

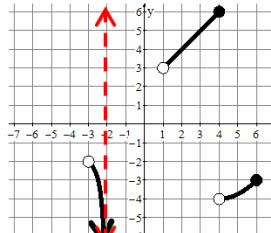
Domain and Range of a Graph:

3.  **Domain:** Interval: _____ **Range:** Interval: _____
Inequality: _____ Inequality: _____

4.  **Domain:** Interval: _____ **Range:** Interval: _____
Inequality: _____ Inequality: _____



5.  **Domain:** Interval: _____ **Range:** Interval: _____
Inequality: _____ Inequality: _____

6.  **Domain:** Interval: _____ **Range:** Interval: _____
Inequality: _____ Inequality: _____

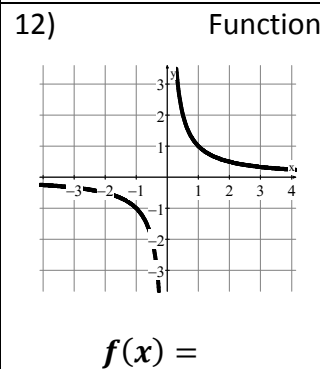
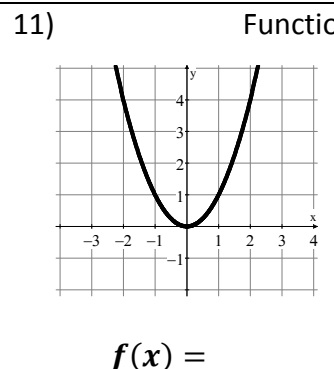
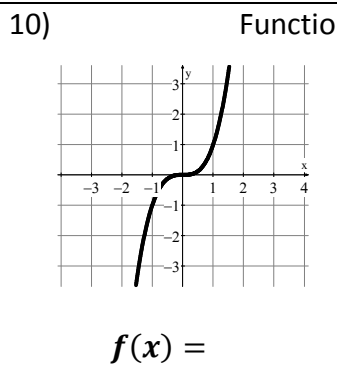
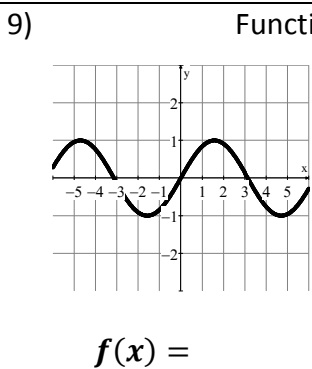
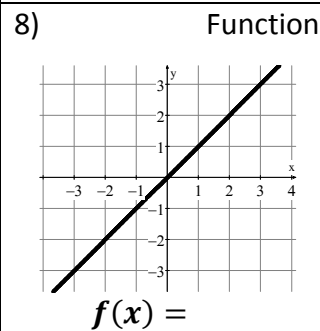
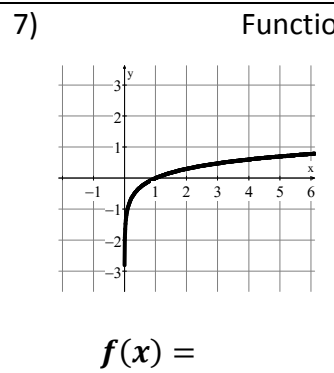
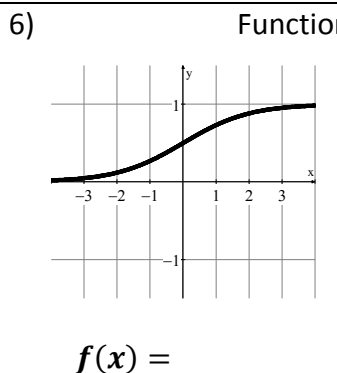
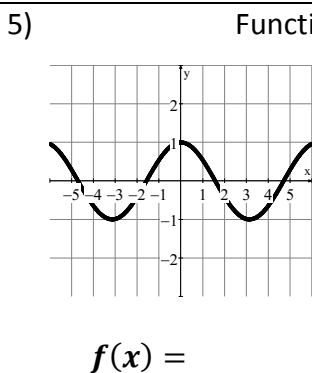
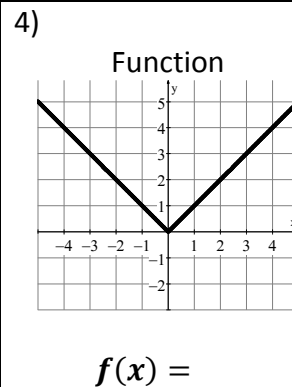
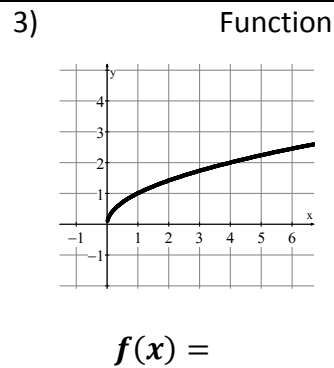
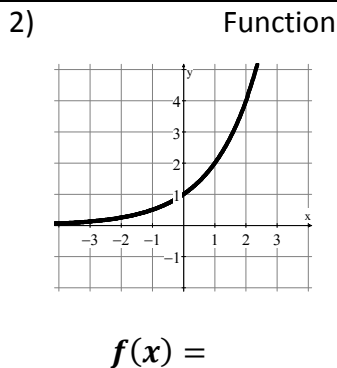
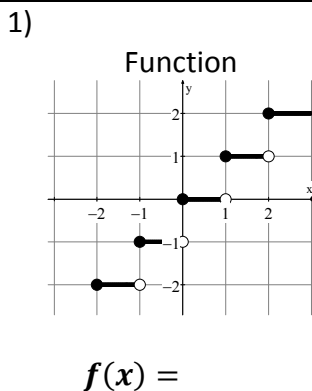
Now summarize what you learned!

2.2 Practice – Domain and Range (Graphs)

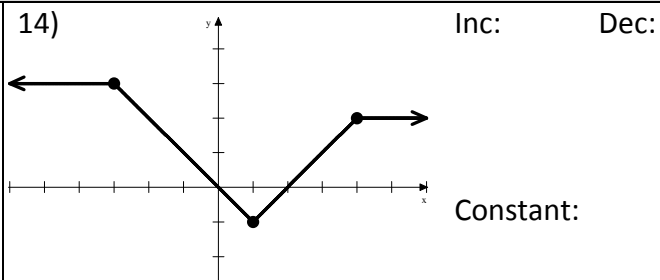
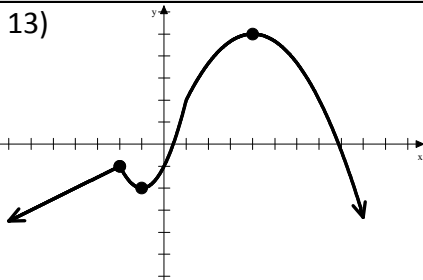
Name: _____

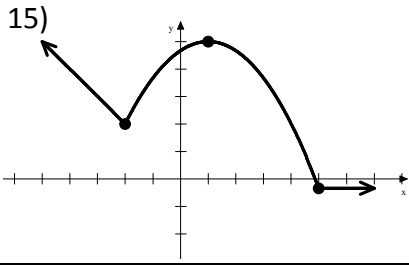
Pre-Calculus

For 1-12, name the basic function shown and write the equation. Try not to look back at your notes if possible.



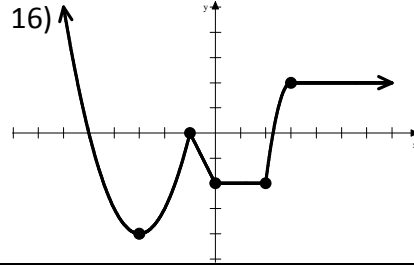
For 13-16, identify the domain intervals where each function is increasing, decreasing, and constant. Use interval notation.





Inc: Dec:

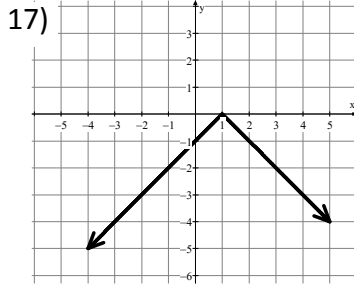
Constant:



Inc: Dec:

Constant:

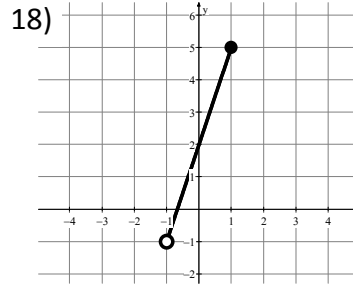
For 17-26, identify the domain and range of each function. Use both interval notation and inequality notation.



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

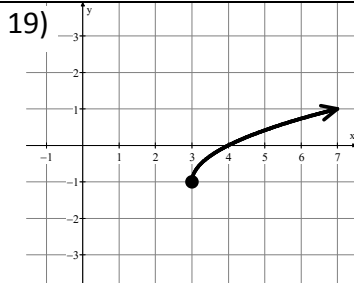
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

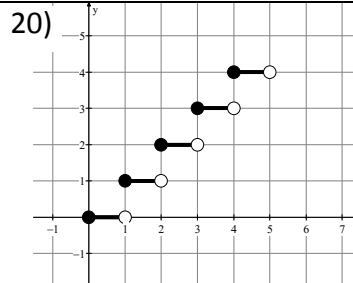
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

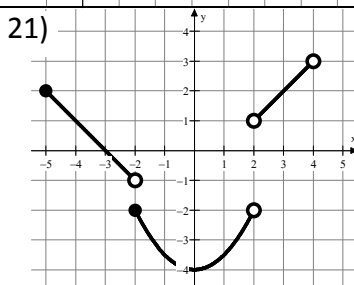
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

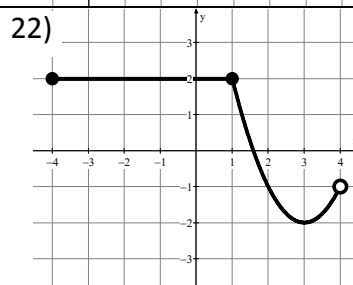
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

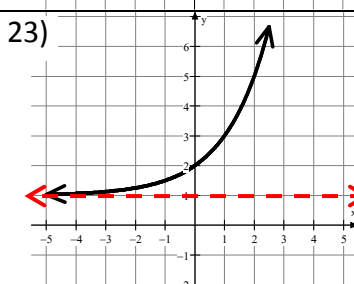
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

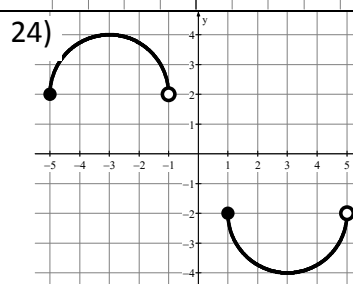
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

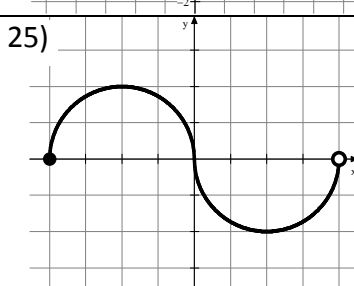
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

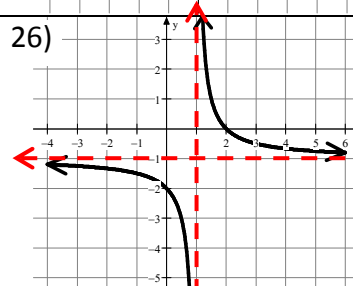
Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

Inequality: _____



Domain:
Interval: _____

Inequality: _____
Range:
Interval: _____

Inequality: _____

2.2 Application and Extension

Relevant domain for a model is a domain that fits the situation. For each of the following models (27-30) give the relevant domain using inequality notation and explain your reasoning in a full sentence. Some problems will have more than one correct answer, so do your best to explain.

27. The volume of a sphere depends on its radius and is modeled by $V(r) = \frac{4}{3}\pi r^3$.

28. A person's height (feet) depends on their age (years) and is modeled by $H(a) = \frac{1}{4}a + 1$

29. The distance you travel while hiking is a function of how long you hike at 3 miles per hour. This is modeled by $d(t) = 3t$ where t is measured in hours.

30. To change Celsius to Fahrenheit, use the formula $F(C) = \frac{9}{5}C + 32$. You are concerned only with temperatures from **freezing to boiling**.

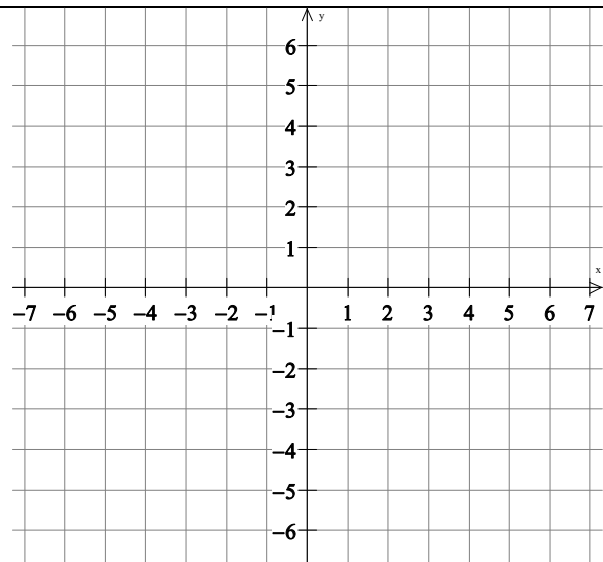
31. Which function is only decreasing?

- (A) Outdoor temperature as a function of time.
- (B) The Dow Jones Industrial Average as a function of time.
- (C) Air pressure in the Earth's atmosphere as a function of altitude.
- (D) World population since 1900 as a function of time.
- (E) Water pressure in the ocean as a function of depth.

32. If a graph's *average* slope between two points is positive, then is the graph increasing or decreasing?

33. Sketch (freehand) a graph of a function f with domain all real numbers that satisfies all of the following conditions:

- a. There are no breaks in the graph (it is continuous).
- b. $f(0) = 2$
- c. $f(3) = 0$
- d. $f(5) = f(0)$
- e. f is increasing on $(-\infty, 0)$ and on $(3, 5)$
- f. f is decreasing on $(0, 3)$ and on $(5, \infty)$



34. Mr. Brust's flip-flops are thrown into the air by a catapult. Their height (measured in feet) is modeled by the equation $h(t) = -16t^2 + 85t$, where t is seconds.

I. What is the relevant domain of this model (use a graphing calculator)? What does it represent?

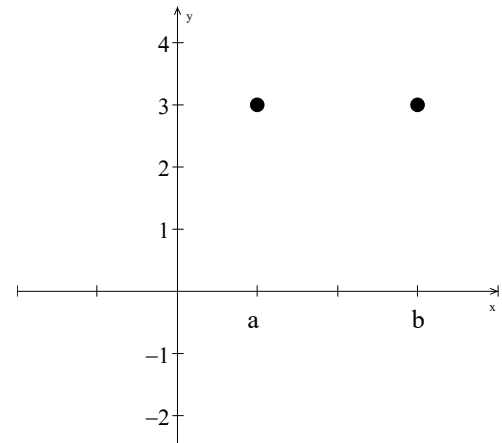
II. What is the relevant range of this model (Use a graphing calculator)? What does it represent?

35. Let f be a polynomial function with degree greater than 2 (cubic, quartic, etc). If $a \neq b$ and $f(a) = f(b) = 3$, which of the following must be true for at least one value of x between a and b . (One, both, or neither could be true.) Explain your reasoning in full sentences.

I. $f(x) = 0$ at least once.

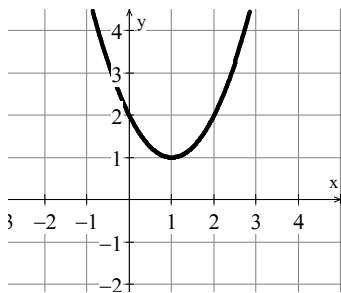
II. $f(x)$ has at least one maximum or minimum.

Hint: Use the graph to help you draw a picture that proves or disproves each statement.

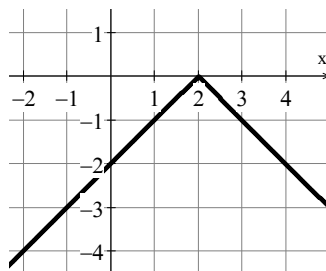


Skillz Review: Write the function of each graph using $f(x) = \sqrt{x}$, $f(x) = x^3$, $f(x) = |x|$, or $f(x) = x^2$.

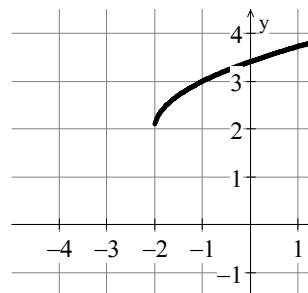
1) $f(x) =$



2) $f(x) =$



3) $f(x) =$



4) $f(x) =$

