

Unit 2 Corrective Assignment – Functions and Limits

Pre-Calculus

1) Do the following pairs of input and output values represent a function: $(-3, 2)$, $(2, 3)$, $(0, 4)$, $(4, 4)$, and $(-2, 3)$? If they don't, give a specific reason why not.

2) Your GPA is a function of the grades you earn in each class. Identify the independent and dependent variables.

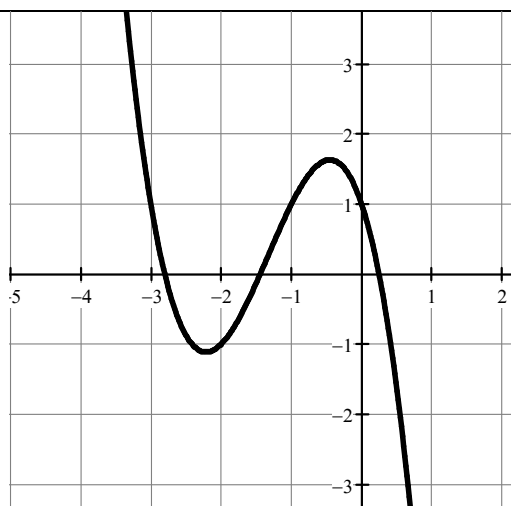
3) Use the graph to the right to approximate the following values to the nearest tenth.

a. $f(-3) =$

b. $f(0) =$

c. If $f(x) = -2$, then $x =$

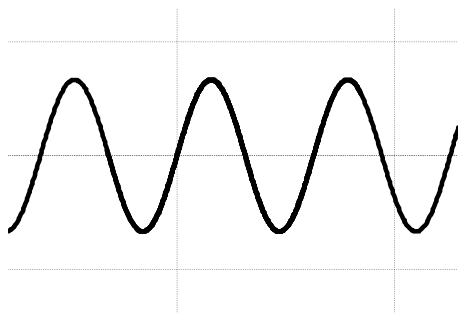
d. If $f(x) = 0$, then the possible value(s) of x are:



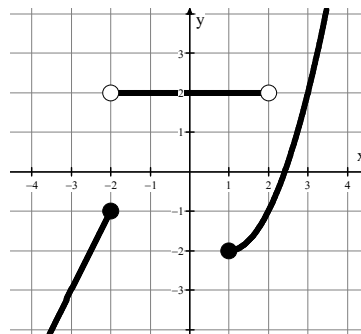
4) If the dependent variable is the height from the ground in feet and the independent variable is the amount of time in seconds that you have spent on a Ferris Wheel, write a sentence explaining the meaning of $H(105) = 62$.

5) Tell if each graph below represents a function.

a.

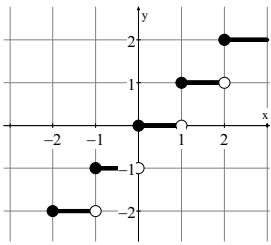


b.



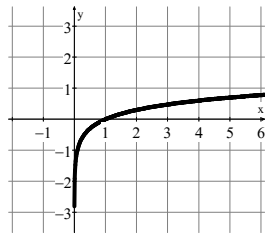
For 6-9, name the basic function shown and write the equation.

6) Function



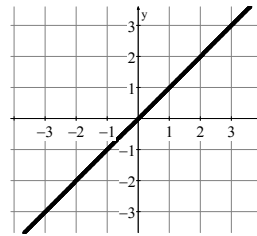
$f(x) =$

7) Function



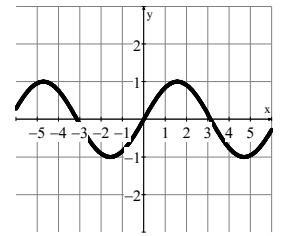
$f(x) =$

8) Function



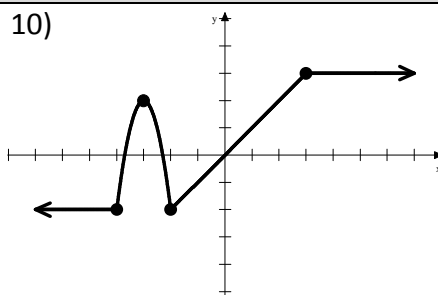
$f(x) =$

9) Function



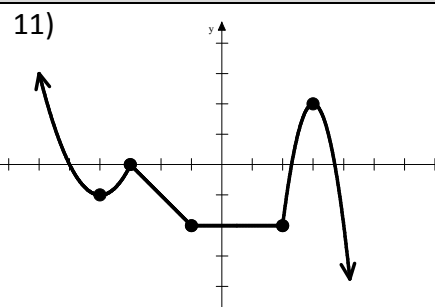
$f(x) =$

For 10-11, identify the domain intervals where each function is increasing, decreasing, and constant. Use interval notation.



Inc: Dec:

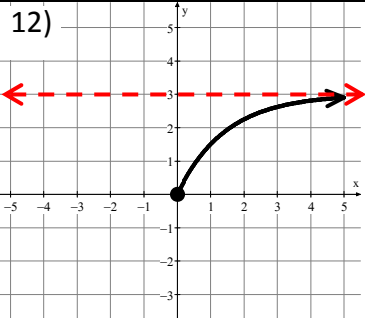
Constant:



Inc: Dec:

Constant:

For 12-15, identify the domain and range of each function. Use both interval notation and inequality notation.

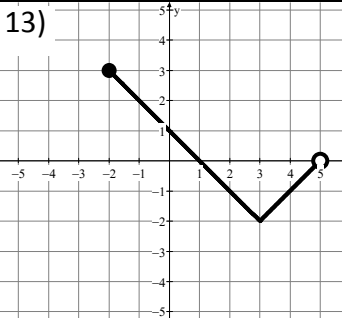


Domain:
Interval: _____

Inequality: _____

Range:
Interval: _____

Inequality: _____

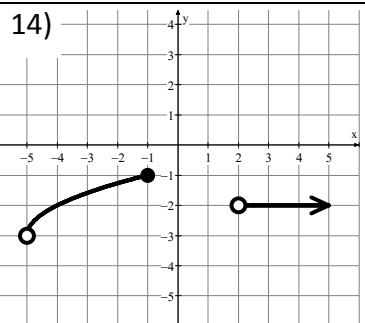


Domain:
Interval: _____

Inequality: _____

Range:
Interval: _____

Inequality: _____

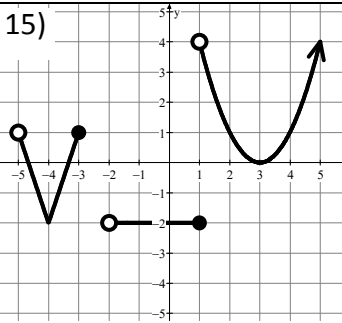


Domain:
Interval: _____

Inequality: _____

Range:
Interval: _____

Inequality: _____



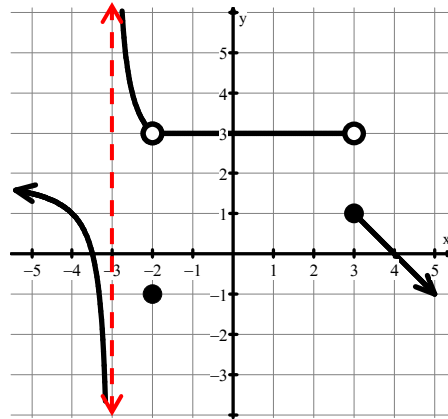
Domain:
Interval: _____

Inequality: _____

Range:
Interval: _____

Inequality: _____

- 16) Identify the x -values of each discontinuity, and write if it is removable or not. If it is nonremovable then classify the type.



- 17) Using the graph on the right, give the value of each statement.

a. $\lim_{x \rightarrow 1^-} f(x) =$

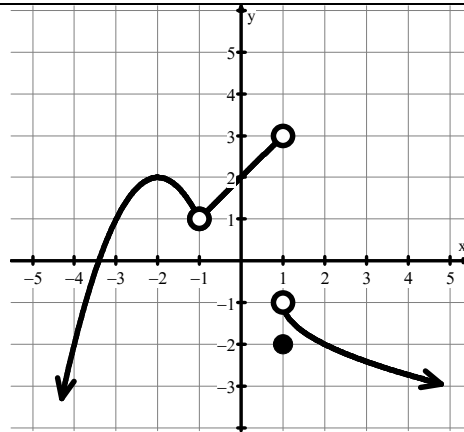
b. $f(-1) =$

c. $\lim_{x \rightarrow -1} f(x) =$

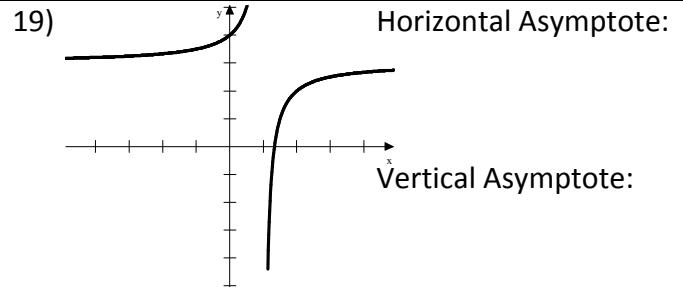
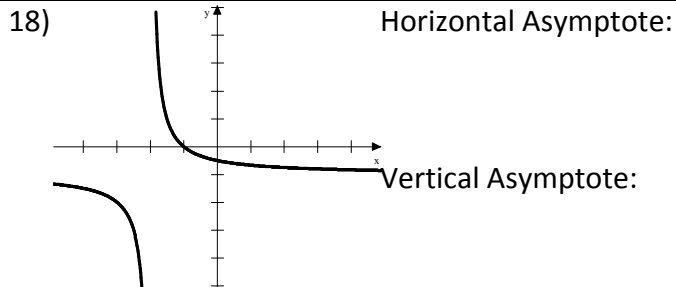
d. $\lim_{x \rightarrow -2} f(x) =$

e. $f(1) =$

f. $\lim_{x \rightarrow 1^+} f(x) =$



For 18-19, use limit notation to represent the horizontal and vertical asymptotes. Then sketch them on the graph.



- 20) $f(x) = \frac{5-3x}{10x+20}$ has a vertical asymptote at $x = -2$. Create a table of values to determine the behavior of the graph at the vertical asymptote, then use limit notation to explain the behavior. Also, use a graphing calculator to determine the horizontal asymptote.

If you need application practice, see previous packets and Review #1.

Answer Key to PC Unit 2 Corrective Assignment

1) Function.				2) Independent: grades you earn in each class. Dependent: GPA											
3) a) 1		b) 1		c) 0.5		d) -2.8, -1.5, or 0.2									
4) After 105 seconds on the Ferris Wheel, your height from the ground is 62 feet.															
5) a) Function b) Not a function															
6) Greatest Integer; $f(x) = \text{int}(x)$		7) Logarithm; $f(x) = \log x$		8) Linear; $f(x) = x$		9) Sine; $f(x) = \sin x$									
10) Inc: $(-4, -3) \cup (-2, 3)$ Dec: $(-3, -2)$ Const: $(-\infty, -4) \cup (3, \infty)$				11) Inc: $(-4, -3) \cup (2, 3)$ Dec: $(-\infty, -4) \cup (-3, -1) \cup (3, -\infty)$ Const: $(-1, 2)$											
12) Domain: $(0, \infty); x \geq 0$ Range: $[0, 3); 0 \leq y < 3$				13) Domain: $[-2, 5); -2 \leq x < 5$ Range: $[-2, 3]; -2 \leq y \leq 3$											
14) Domain: $(-5, -1] \cup (2, \infty); -5 < x \leq -1$ Range: $(-3, -1]; -3 < y \leq -1$				15) Domain: $(-5, -3] \cup (-2, \infty); -5 < x \leq -3$ and $x > -2$ Range: $[-2, \infty); y \geq -2$											
16) Nonremovable infinite discontinuity at $x = -3$. Removable discontinuity at $x = -2$. Nonremovable jump discontinuity at $x = 3$.															
17) a. 3		b. Does not exist		c. 1		d. 2		e. -2		f. -1					
18) HA: $\lim_{x \rightarrow -\infty} f(x) = -1$ $\lim_{x \rightarrow \infty} f(x) = -1$				VA: $\lim_{x \rightarrow -2^-} f(x) = -\infty$ $\lim_{x \rightarrow -2^+} f(x) = \infty$				19) HA: $\lim_{x \rightarrow -\infty} f(x) = 3$ $\lim_{x \rightarrow \infty} f(x) = 3$				VA: $\lim_{x \rightarrow 1^-} f(x) = \infty$ $\lim_{x \rightarrow 1^+} f(x) = -\infty$			
20)															
x		-2.1		-2.01		-2.001		-2		-1.999		-1.99		-1.9	
$f(x)$		-11.3		-110.3		-1100.3		Error		1099.7		109.7		10.7	
HA: $\lim_{x \rightarrow -\infty} f(x) = -0.3$ $\lim_{x \rightarrow \infty} f(x) = -0.3$						VA: $\lim_{x \rightarrow -2^-} f(x) = -\infty$ $\lim_{x \rightarrow -2^+} f(x) = \infty$									