

Chapter 1.1-1.3 Practice Test

Pre-Calculus | Mr. Cooper

Name _____

Date _____

Period _____

1. Find the domain and range of the following functions:

a. $f(x) = |x - 4| - 2$

D: $(-\infty, \infty)$
R: $[-2, \infty)$

b. $g(x) = \sqrt{-x - 5}$

$$\begin{array}{l} -x - 5 \geq 0 \\ +5 \quad +5 \\ \hline -x \geq 5 \\ \frac{-x}{-1} \geq \frac{5}{-1} \\ x \leq -5 \end{array}$$

D: $(-\infty, -5]$
R: $[0, \infty)$

c. $f(x) = \frac{2x}{x^2 - 4x} = \frac{\cancel{2}(x)}{(x)(x-4)}$
 $x \neq 0 \quad x - 4 \neq 0$
 $x \neq 4$

D: $(-\infty, 0) \cup (0, 4) \cup (4, \infty)$

R:

d. $g(x) = \frac{\sqrt{x+3}}{x-7}$

$$\begin{array}{l} x + 3 \geq 0 \\ -3 \quad -3 \\ \hline x \geq -3 \end{array} \quad [-3, \infty)$$

D: $[-3, 7) \cup (7, \infty)$

R:

2. Determine algebraically whether the function is odd or even. Work must be shown to receive any credit.

a. $h(x) = 3x^4 - x^2 + 8$

$$\begin{aligned} h(-x) &= 3(-x)^4 - (-x)^2 + 8 \\ &= 3x^4 - x^2 + 8 \end{aligned}$$

EVEN FUNCTION

b. $g(x) = \frac{2}{x^3 - 7} \stackrel{g(x)}{=} \frac{2}{(-x)^3 - 7} = \frac{2}{-x^3 - 7}$

NEITHER

c. $f(t) = 7|t| + t^2$

$$\begin{aligned} f(-t) &= 7|-t| + (-t)^2 \\ &= 7t + t^2 \end{aligned}$$

EVEN FUNCTION

d. $P(x) = 5x^3 - 2|4x| - 4$

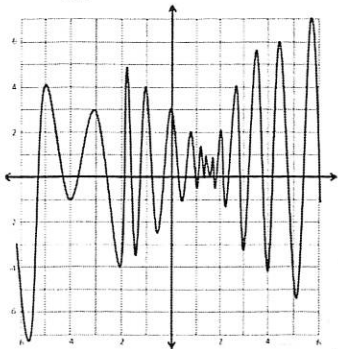
$$\begin{aligned} P(-x) &= 5(-x)^3 - 2|4(-x)| - 4 \\ &= -5x^3 - 8x - 4 \end{aligned}$$

NEITHER

e) How does the graph relate to its parent function

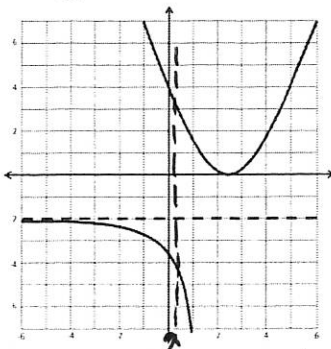
3. Determine whether the graph is a function, and explain why it is or isn't.

a.



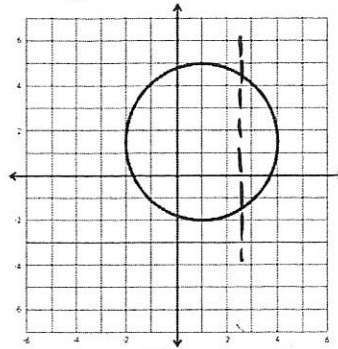
yes every input has ONE output

b.



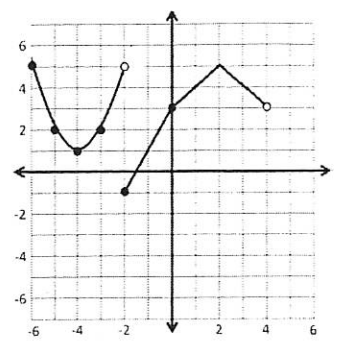
No several inputs have multiple outputs

c.



No, multiple inputs have more than 1 output

d.



yes

4. State if each point is a local min, local max, or neither. Identify intervals of increasing, decreasing, and constant.

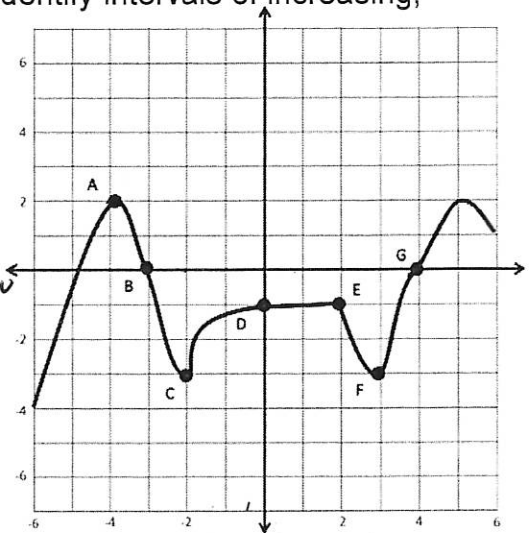
- A) local maximum
- B) Neither
- C) local minimum
- D) Neither
- E) Neither
- F) local minimum
- G) Neither

$f(x)$ increases on $(-\infty, -4) \cup (-2, 0) \cup (3, 5)$

$f(x)$ decreases on $(-4, -2) \cup (2, 3) \cup (5, \infty)$

$f(x)$ is constant on $(0, 2)$

~~$x+2=0$~~
 ~~$x=2$~~
 ~~$x=2$~~
 ~~$x=2$~~



5. Graph the following function: $f(x) = -(x+2)^2 - 4$

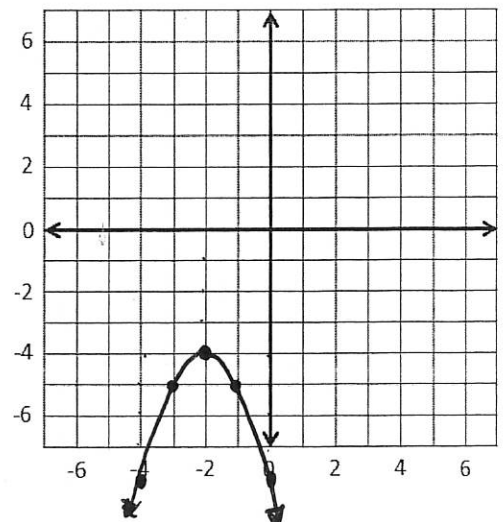
- a) List the domain and range
- b) On what interval is the function increasing, decreasing, neither
- c) Is the function odd, even, or neither
- d) Give the function's extrema
- e) How does the graph relate to its parent function

a) D: $(-\infty, \infty)$
R: $(-\infty, -4]$

b) $f(x)$ increases on $(-\infty, -2)$
 $f(x)$ decreases on $(-2, \infty)$

c) NEITHER

d) Absolute Maximum
 $(-2, -4)$

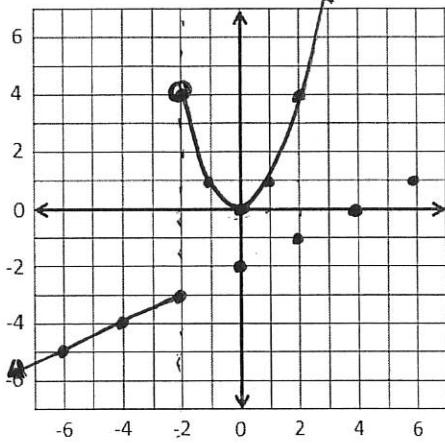


e) Shifted left 2 units
Shifted down 4 units
Vertical reflection

6. Graph the piece-wise functions:

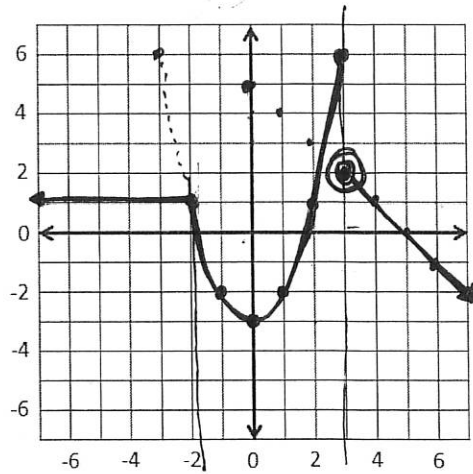
a.

$$f(x) = \begin{cases} \frac{1}{2}x - 2; & x \leq -2 \\ x^2; & x > -2 \end{cases}$$



b.

$$g(x) = \begin{cases} 1; & x < -2 \\ x^2 - 3; & -2 \leq x \leq 3 \\ -|x| + 5; & x > 3 \end{cases}$$



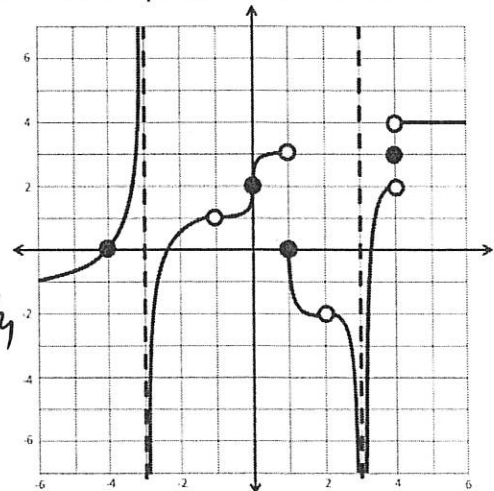
7. Decide if the following function is continuous or discontinuous at the labeled points. If discontinuous identify the type of discontinuity.

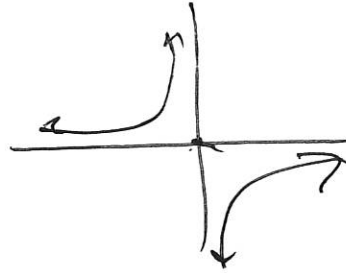
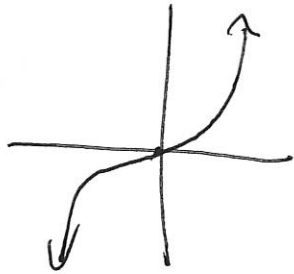
$x = -4$ continuous $x = 0$ continuous

$x = 1$ jump discontinuity $x = -3$ V.A.

$x = 4$ jump discontinuity $x = 2$ point discontinuity

$x = -1$ point discontinuity $x = 3$ V.A.





a $f(t) = |t| + t^2$