

MTH 1112 Test #2

SUMMER 2021

Author _____

Name _____

Show **CLEARLY** how you arrive at your answers!

1. Given that $f(x) = \frac{x}{x^2+1}$, compute the following:

(a) $f(-1) =$

(b) $f(2x) =$

(c) $f(x+h) =$

2. Given that $f(x) = \frac{x}{x^2-16}$, find the domain.

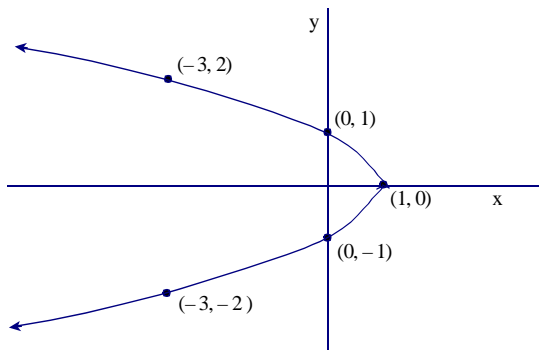
3. Given that $f(x) = \begin{cases} -2x + 3 & \text{if } x < 1 \\ 3x - 2 & \text{if } x \geq 1 \end{cases}$, draw the graph of $y = f(x)$

4. Given that $f(x) = \begin{cases} -2x + 3 & \text{if } x < 1 \\ 3x - 2 & \text{if } x \geq 1 \end{cases}$,

(a) Compute: $f(0) =$

(b) Compute: $f(2) =$

5. The graph below defines a relation between variables x and y .



(a) Determine whether or not y is a function of x . Justify your answer.

(b) State the domain of the relation.

(c) State the range of the relation.

(d) Give the x -intercepts.

(e) Give the y -intercepts.

(f) State any symmetry with respect to the x -axis, y -axis, or the origin.

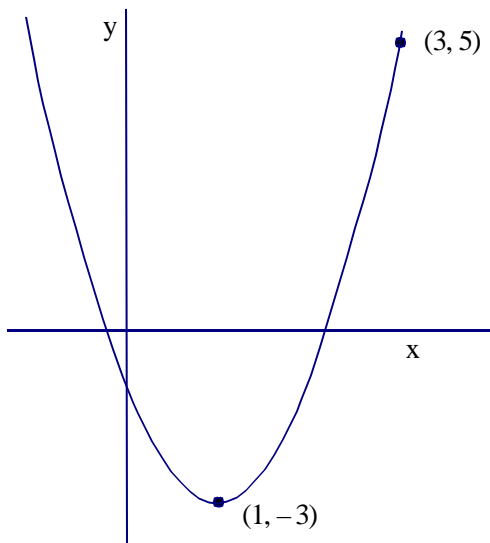
6. $f(x) = (x - 1)^3 + 2$.

Graph the function using techniques of shifting, compressing/stretching, and/or reflecting. Start with the graph of the basic function and show all of the steps. Be sure to show at least three (3) key points.

7. $f(x) = x^2 - 8x + 1$. Complete the square of the expression. Then graph the function.

8. The graph of a quadratic function is given below. Based on the information contained in the graph, give the definition of the function.

$$f(x) =$$



9. Solve the inequality: $2x^2 < 5x + 3$

Makeup 1 Do this exercise only if you lost credit on Exercise 1 on Test #1

Solve the equation: $\frac{x}{x+7} = \frac{9}{8}$

Makeup 3 Do this exercise only if you lost credit on Exercise 3 on Test #1

Solve by factoring: $x^2 + 5x - 24 = 0$