

**Pre Calculus**  
**Ch 3 and 4 Cumulative Review Sheet**

Name \_\_\_\_\_  
 Date \_\_\_\_\_ Period \_\_\_\_\_

1. Find the domain of the function. Write your answer in interval notation.

$$f(x) = \frac{\sqrt{x}}{|x|}$$

Domain \_\_\_\_\_

2. Find the domain of the function. Write your answer in interval notation.

$$g(x) = \frac{x^2}{(x+2)(x-1)\sqrt{x+1}}$$

Domain \_\_\_\_\_

3. Use the graph of the function  $f$  to answer the following questions.

a) State the domain: \_\_\_\_\_

b) State the range: \_\_\_\_\_

c) List the  $y$ -intercept(s) \_\_\_\_\_

d) List the  $x$ -intercept(s) \_\_\_\_\_

\_\_\_\_\_

e) Find  $f(-2)$  \_\_\_\_\_

f) For what values of  $x$  does  $f(x) = 2$ ? \_\_\_\_\_

\_\_\_\_\_

g) For what values of  $x$  is  $f(x) \leq 0$ ?  
 Give your answer in interval notation.

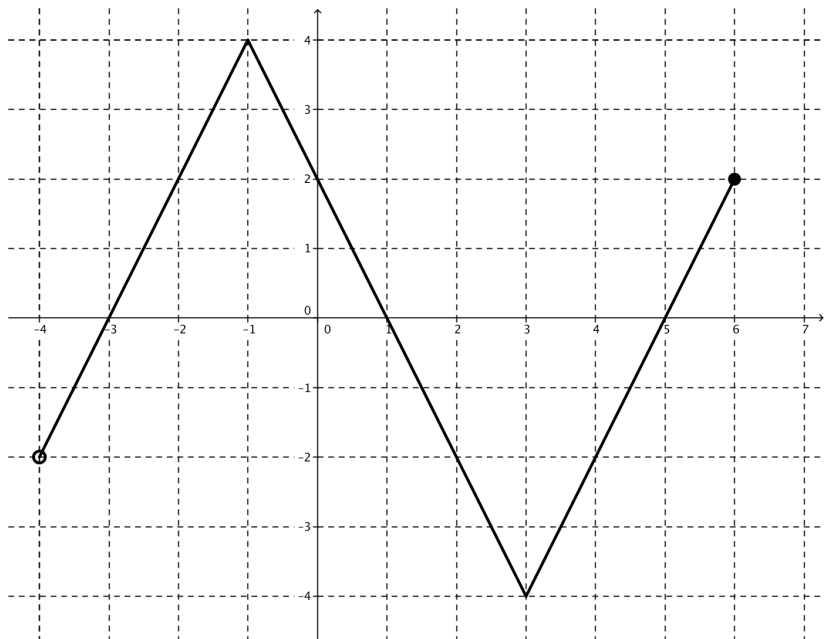
\_\_\_\_\_

h) Over what interval(s) is  $f$  decreasing?  
 \_\_\_\_\_

i) Over what interval(s) is  $f$  increasing?  
 \_\_\_\_\_

k) List the local minimum(s).  
 \_\_\_\_\_

function  $f$



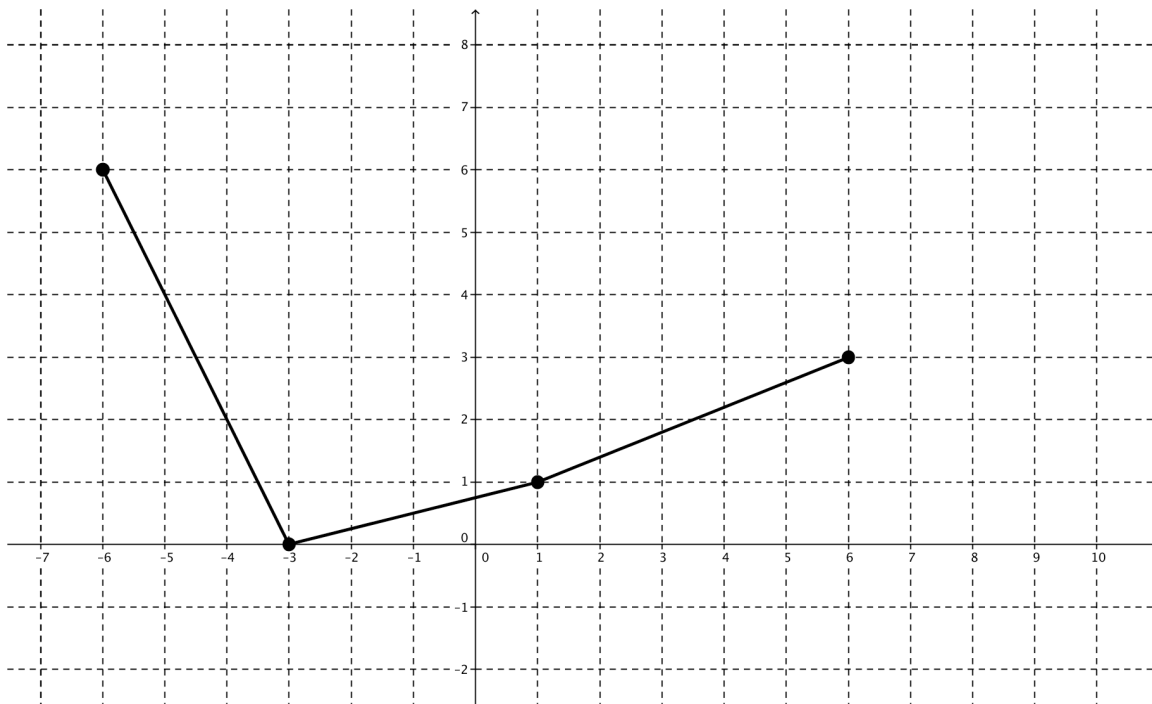
j) List the local maximum(s).  
 \_\_\_\_\_

l) Is  $f$  even, odd or neither?  
 \_\_\_\_\_

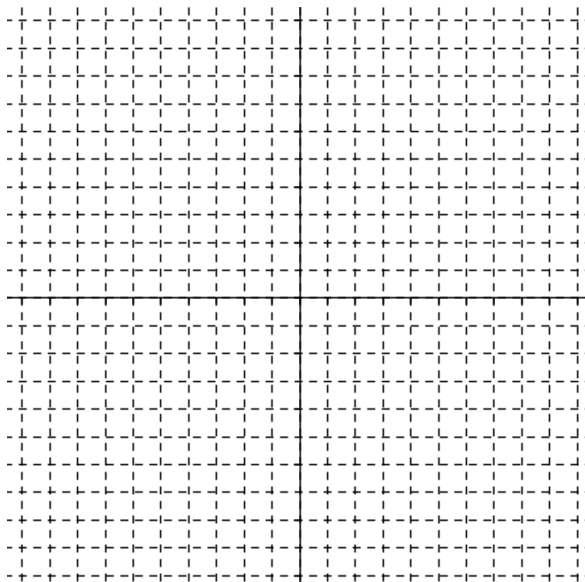
4. The graph of a function  $f$  is illustrated on the grid below.

a. List the transformations to graph

b. Graph  $F(x)$  on the grid transformed to the graph of **AND** draw the graph of  $F(x)$ .



5. Graph the function, showing **at least five points**. Then fill in the blanks below.



Coordinate of the Vertex \_\_\_\_\_

Where is  $f(x) > 0$ ? \_\_\_\_\_

Equation for the Axis of Symmetry \_\_\_\_\_

Where is  $f(x) < 0$ ? \_\_\_\_\_

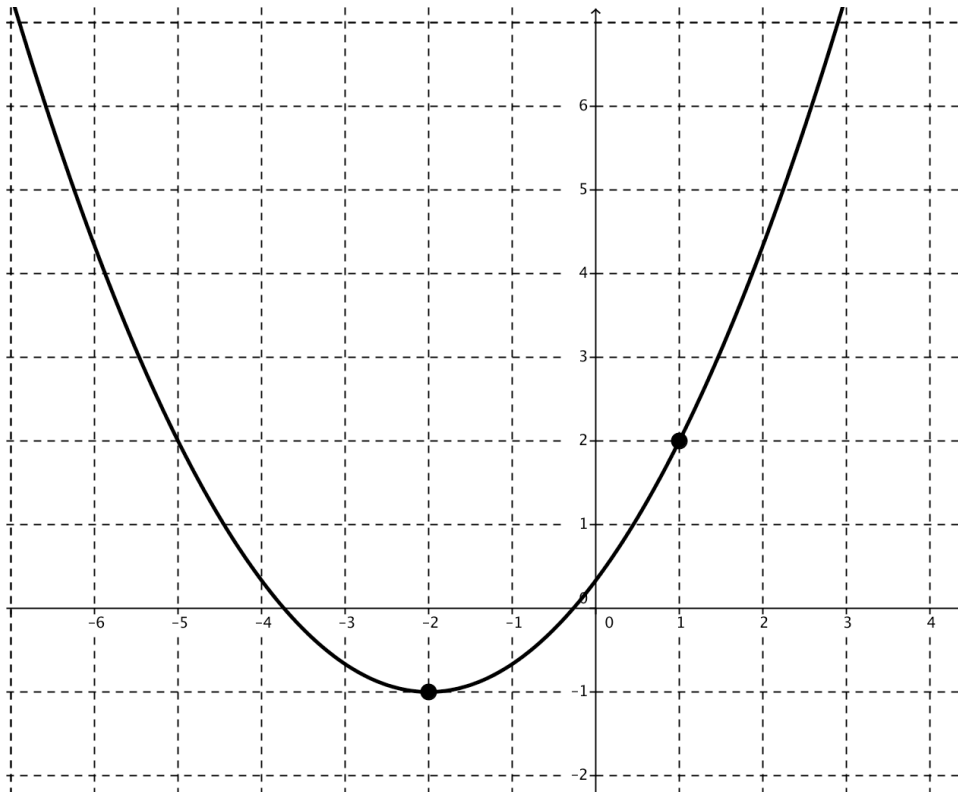
$x$ -intercepts \_\_\_\_\_

Domain \_\_\_\_\_

$y$ -intercepts \_\_\_\_\_

Range \_\_\_\_\_

6. Determine the quadratic function whose graph is given.



Standard Form: \_\_\_\_\_

7. a. Solve the inequality. Write your answer in interval notation.

\_\_\_\_\_

b. Solve the inequality. Write your answer in interval notation.

$$2x^2 > 12x + 14$$

\_\_\_\_\_

8. The price  $p$  (in dollars) and the quantity  $x$  sold of a certain product obey the demand equation

$$p = -\frac{1}{30}x + 120$$

a) Express the revenue  $R$  as a function of  $x$  where  $R = xp$ . \_\_\_\_\_

b) Find the quantity of  $x$  that maximizes revenue. \_\_\_\_\_

c) Find the maximum revenue. \_\_\_\_\_

d) Find the price that produces the maximum revenue. \_\_\_\_\_

9. A farmer with 2640 meters of fencing wants to enclose a rectangular plot that borders a barn. If the farmer does not fence the side along the barn, what is the largest area that can be enclosed? Express the area  $A$  of the rectangle as a function of  $x$ . Find the maximum area, the length and the width of the rectangle.

Equation for  $A$  as a function of  $x$  \_\_\_\_\_

Maximum Area \_\_\_\_\_

Width \_\_\_\_\_

Length \_\_\_\_\_