Mathematics 2200
Chapter 7: Absolute Value and Reciprocal Functions - TEST

NAME:_____ _____ / 29 = _____

SECTION A: Place the LETTER of your response in the space provided at the right. 10 marks

1. What is the value of the expression $-|(-4)-(-3)^2|$? 1._____

A) 13 B) 5

C) -1 D) -13

2. Given the table

x	$y=f(x)$
-3	-5
-2	-3
-1	-1
0	1
1	3

which table represents $y=|f(x)|$ 2._____

A)

x	$y=f(x)$
3	5
2	3
1	1
0	1
1	3

B)

x	$y=f(x)$
-3	5
-2	3
-1	1
0	1
1	3

C)

x	$y=f(x)$
3	-5
2	-3
1	-1
0	1
1	3

D)

x	$y=f(x)$
-3	$-\frac{1}{5}$
-2	$-\frac{1}{3}$
-1	-1
0	1
1	$\frac{1}{3}$

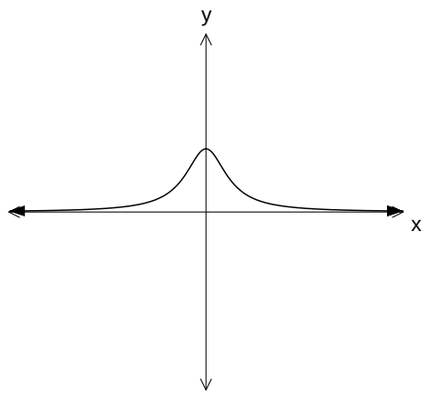
3. The graph of $y=\frac{1}{f(x)}$ is shown below. How many *x*-intercepts does the function $y=f(x)$ have? 3._____

A) 0

B) 1

C) 2

D) 4



4. What are the equations of the vertical asymptotes for thefunction $y=\frac{1}{x^2-4x}$? 4._____

A) $x=-2, x=2$ B) $x=0, x=4$

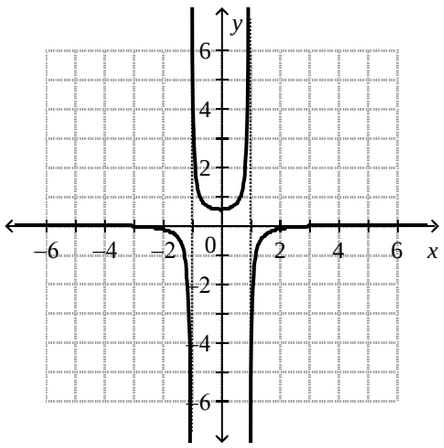
C) $x=0, x=-4$ D) $x=2$

5. Solve: $|6-2x|=x$ 5._____

A) $x=2, x=6$ B) No solutions

C) $x=-2, x=6$ D) $x=2$

6. The function $y = \frac{1}{f(x)}$ is shown. What is the function $y = f(x)$? 6._____



A) $y = -2x^2 + 2$ B) $y = -2x^2 - 2$

C) $y = 2x^2 + 2$ D) $y = 2x^2 - 2$

7. The function $y = f(x)$ contains the point (-2, $-\frac{1}{3}$). Which is a point on the graph of $y = \frac{1}{f(x)}$? 7._____

A) (2,- $\frac{1}{3}$) B) (-2, $\frac{1}{3}$)

C) (-2,- 3) D) (2, 3)

8. Solve: $2|4 - x| - 5 = 3$ 8._____

A) No solutions B) $x = 0, x = 8$

C) $x = 0, x = -8$ D) $x = 3, x = 5$

9. Which piece-wise function represents $y = |3x - 12|$? 9._____

A) $y = \begin{cases} 3x - 12, if\ x \leq 4 \\ -3x + 12, \ \ if\ x > 4 \end{cases}$ B) $y = \begin{cases} 3x - 12, if\ x \geq 4 \\ -3x + 12, \ \ if\ x < 4 \end{cases}$

C) $y = \begin{cases} 3x - 12, if\ x \leq -4 \\ -3x + 12, \ \ if\ x > -4 \end{cases}$ D) $y = \begin{cases} 3x - 12, if\ x \geq -4 \\ -3x + 12, \ \ if\ x < -4 \end{cases}$

10. The reciprocal of which function would have two vertical asymptotes? 10._____

A) $y = x^2 + 9$ B) $y = 3x + 9$

C) $y = x^2 + 2x + 1$ D) $y = x^2 - 8x + 9$

SECTION B: Answer ALL questions in the space provided. Algebraic methods are required. Ensure that you include appropriate workings. 19 marks

1. Solve. Check for extraneous solutions.

$$|x^2 - 5x - 14| = x + 2$$ ____ / 5

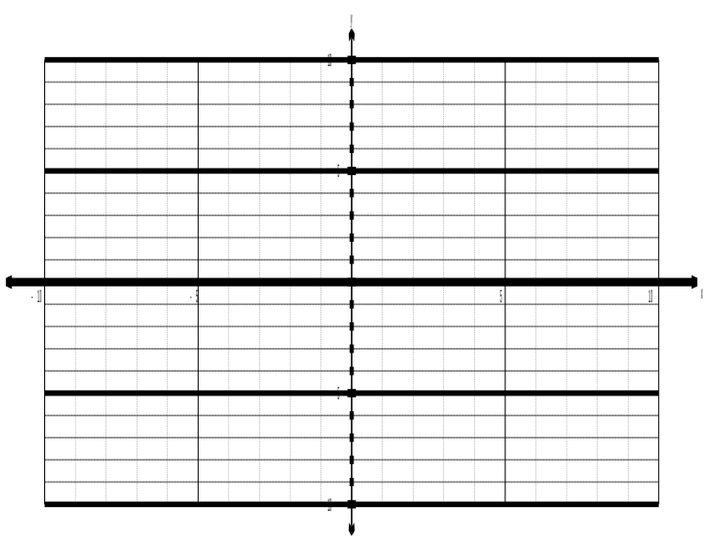
2. For the function $y = |x^2 - 4x - 5|$, ____ / 5

(i) Determine the *x*-intercepts and the *y*-intercept.

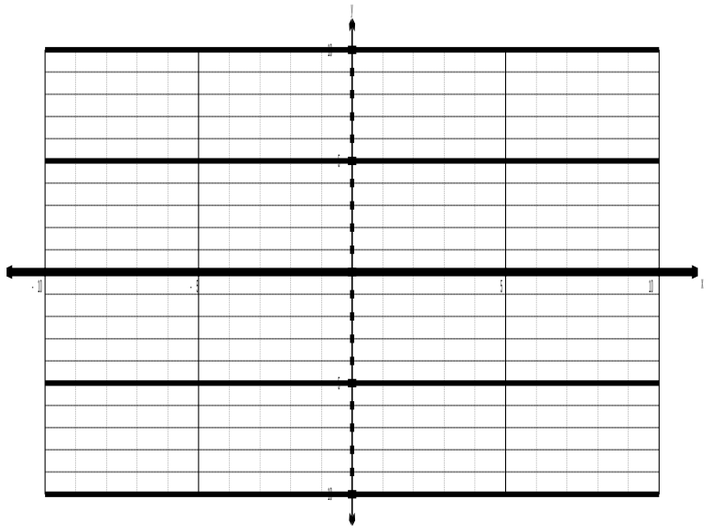
(ii) Determine the vertex of the parabola and its image.

(iii) Sketch its graph.

(iv) State the domain and range.



3. Sketch the graphs of $y = -2x + 3$ and its reciprocal on the axes below. State (and show) the asymptotes (vertical and horizontal), intercepts, and invariant points. ____ 4



4. Sketch the graphs of $y = x^2 - 6x + 8$ and its reciprocal on the axes below. State (and show) the asymptotes (vertical and horizontal), intercepts, and invariant points, and the vertex and its image. ____ / 5