

# Quiz 1A, Precalculus-04

Dr. Graham-Squire, Fall 2013

1:17

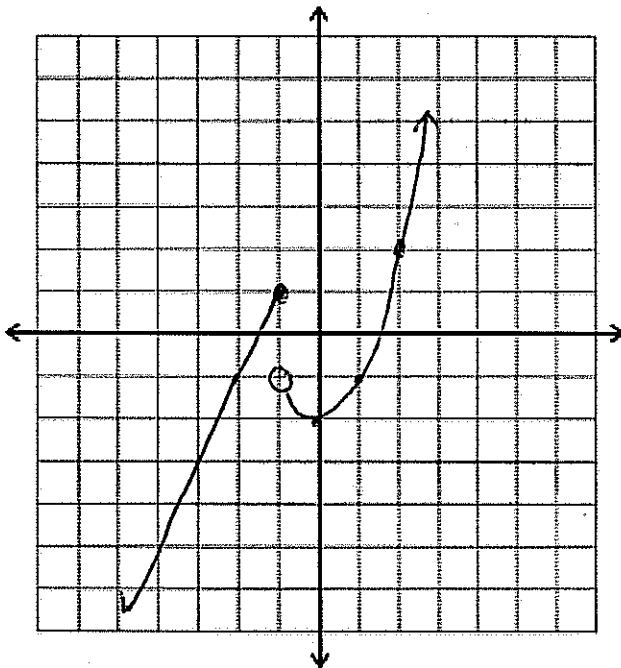
1:21

4

Name: Key

1. (4 points) Sketch a graph of the piecewise function. Make sure to correctly label the points on the graph!

$$f(x) = \begin{cases} 2x + 3 & \text{if } x \leq -1 \\ x^2 - 2 & \text{if } x > -1 \end{cases}$$



x	y
-1	$2(-1) + 3 = 1$
-2	$2(-2) + 3 = -1$
0	$(0)^2 - 2 = -2$
1	$1^2 - 2 = -1$
2	$2^2 - 2 = 2$

2. (2 points) Find the domain of the function  $f(x) = \sqrt{7x - 20}$ . Leave your answer in fractional form, and explain in words why that is the correct domain for the function.

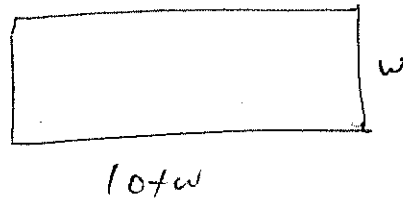
Need  $7x - 20 \geq 0$  b/c cannot have negative under the  $\sqrt{\quad}$  sign

$$\Rightarrow x \geq \frac{20}{7}$$

or

$$\left[ \frac{20}{7}, \infty \right)$$

3. (4 points) Jason builds a rectangular fence in his backyard. The length of the fence is 10 feet longer than the width of the fence, and the rectangle has an area of 281.25 ft<sup>2</sup>. Find the width of the fence. Make sure to use mathematical equations- guess and check will NOT get full credit.



$$\text{Area} = l \cdot w = w(10+w)$$

$$\Rightarrow 281.25 = 10w + w^2$$

$$\Rightarrow w^2 + 10w - 281.25 = 0$$

$$\text{Quad. formula} \Rightarrow w = \frac{-10 \pm \sqrt{10^2 - 4(1)(-281.25)}}{2}$$

$$w = \frac{-10 \pm \sqrt{1225}}{2}$$

$$w = \frac{-10 \pm 35}{2}$$

$$w = \frac{25}{2} \quad \text{or} \quad \frac{-45}{2}$$

$$w = 12.5$$

← Makes no sense

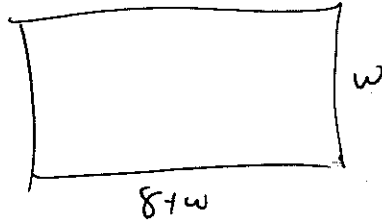
Quadratic formula is  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , if you need it.

# Quiz 1B, Precalculus-04

Dr. Graham-Squire, Fall 2013

Name: Key

1. (4 points) Jason builds a rectangular fence in his backyard. The length of the fence is 8 feet longer than the width of the fence, and the rectangle has an area of 116.25 ft<sup>2</sup>. Find the width of the fence. Make sure to use mathematical equations- guess and check will NOT get full credit.



$$\text{Area} = l \cdot w$$

$$116.25 = (8+w)w$$

$$116.25 = 8w + w^2$$

$$0 = w^2 + 8w - 116.25$$

$$\text{Quad. form: } w = \frac{-8 \pm \sqrt{8^2 - 4(1)(-116.25)}}{2}$$

$$= \frac{-8 \pm \sqrt{529}}{2}$$

$$= \frac{-8 \pm 23}{2}$$

$$w = \frac{15}{2} \text{ or } \frac{-31}{2}$$

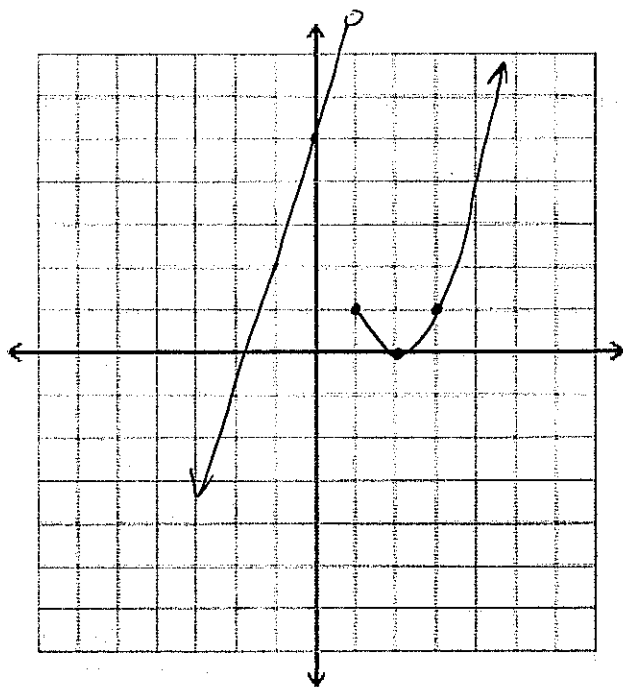
Make sense.

$$\Rightarrow \boxed{w = 7.5}$$

Quadratic formula is  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , if you need it.

2. (4 points) Sketch a graph of the piecewise function. Make sure to correctly label the points on the graph!

$$f(x) = \begin{cases} 3x + 5 & \text{if } x < 1 \\ (x - 2)^2 & \text{if } x \geq 1 \end{cases}$$



3. (2 points) Find the domain of the function  $f(x) = \sqrt{5x - 24}$ . Leave your answer in fractional form, and explain in words why that is the correct domain for the function.

Need  $5x - 24 \geq 0$  b/c cannot have negative under  $\sqrt{\quad}$  sign

$$\Rightarrow 5x \geq 24$$

$$x \geq \frac{24}{5}$$

or

$$\text{domain} = \left[ \frac{24}{5}, \infty \right)$$