

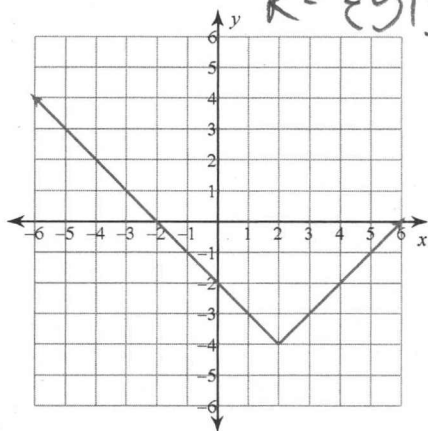
Graphing Absolute Value Functions

Graph each equation.

ALL DOMAINS $D = \{x \in \mathbb{R}\}$

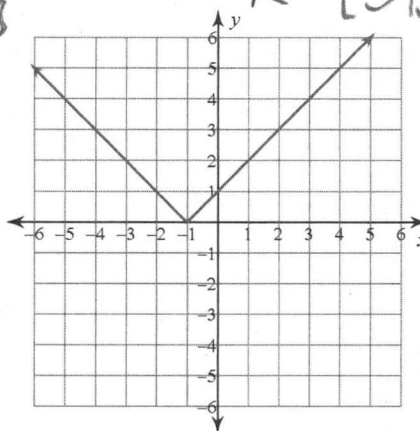
1) $y = |x - 2| - 4$

$R = \{y \mid y \geq -4, y \in \mathbb{R}\}$



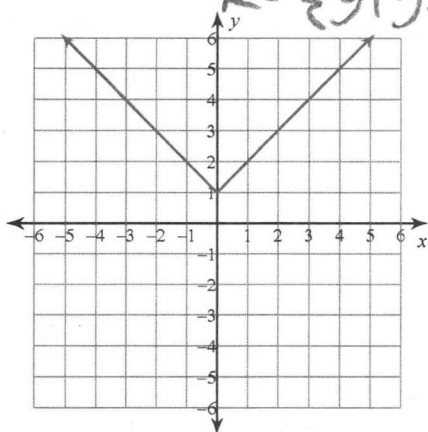
2) $y = |x + 1|$

$R = \{y \mid y \geq 0, y \in \mathbb{R}\}$



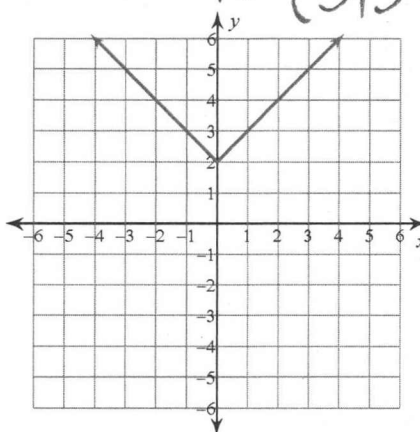
3) $y = |x| + 1$

$R = \{y \mid y \geq 1, y \in \mathbb{R}\}$



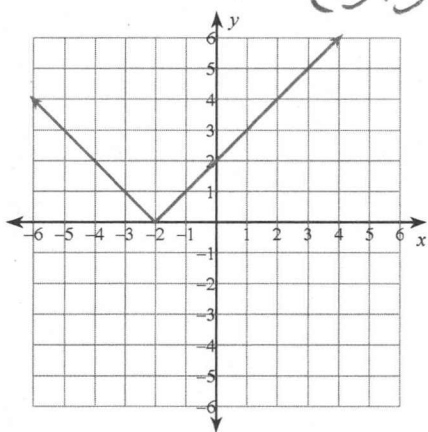
4) $y = |x| + 2$

$R = \{y \mid y \geq 2, y \in \mathbb{R}\}$



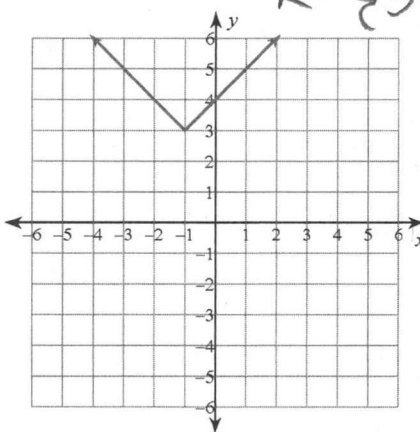
5) $y = |x + 2|$

$R = \{y \mid y \geq 0, y \in \mathbb{R}\}$



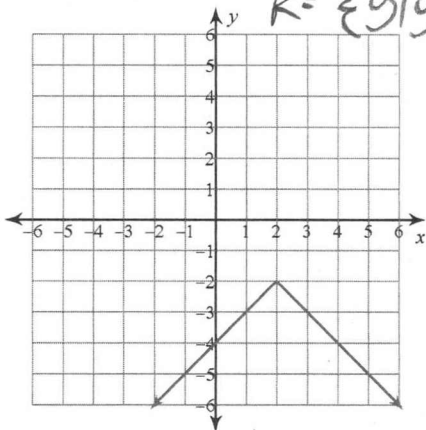
6) $y = |x + 1| + 3$

$R = \{y \mid y \geq 3, y \in \mathbb{R}\}$



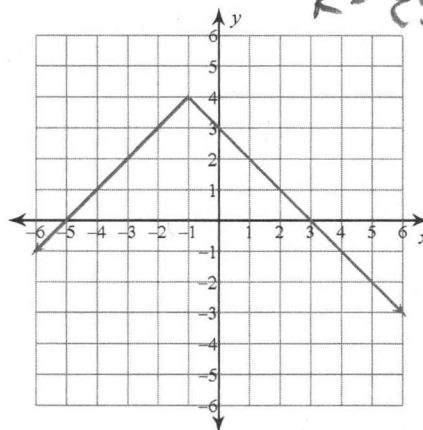
7) $y = -|x - 2| - 2$

$R = \{y \mid y \leq -2, y \in \mathbb{R}\}$



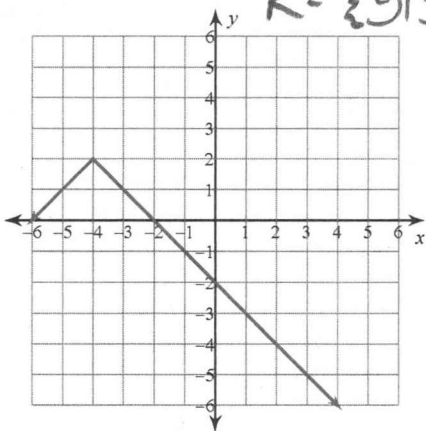
8) $y = -|x + 1| + 4$

$R = \{y \mid y \leq 4, y \in \mathbb{R}\}$



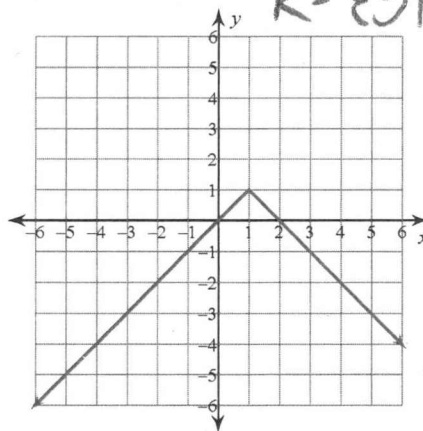
9) $y = -|x + 4| + 2$

$R = \{y \mid y \leq 2, y \in \mathbb{R}\}$



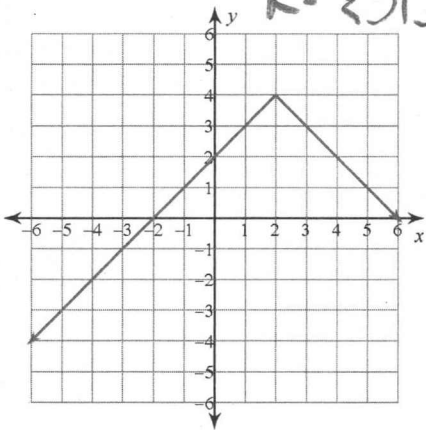
10) $y = -|x - 1| + 1$

$R = \{y \mid y \leq 1, y \in \mathbb{R}\}$



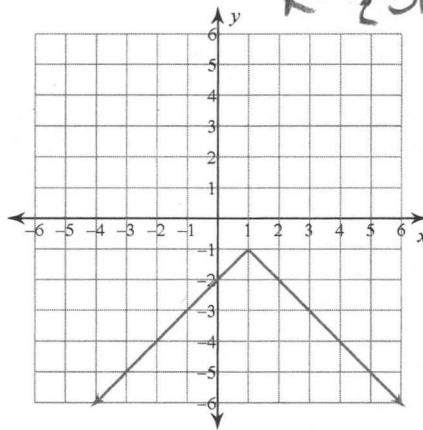
11) $y = -|x - 2| + 4$

$R = \{y \mid y \leq 4, y \in \mathbb{R}\}$



12) $y = -|x - 1| - 1$

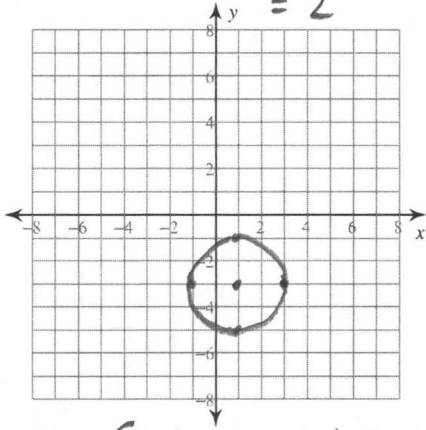
$R = \{y \mid y \leq -1, y \in \mathbb{R}\}$



Equations of Circles

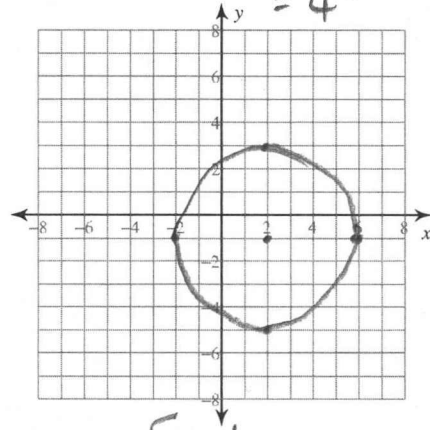
Identify the center and radius of each. Then sketch the graph.

1) $(x - 1)^2 + (y + 3)^2 = 4$
 $= 2^2$



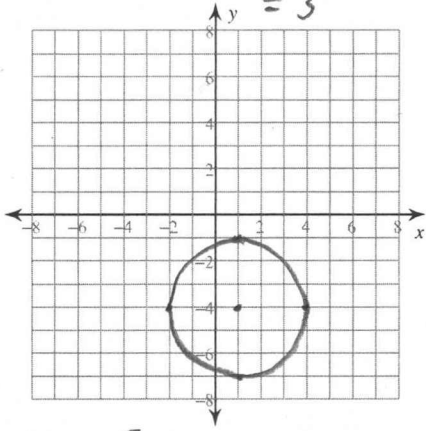
$D = \{x \mid -1 \leq x \leq 3, x \in \mathbb{R}\}$
 $R = \{y \mid -5 \leq y \leq -1, y \in \mathbb{R}\}$

2) $(x - 2)^2 + (y + 1)^2 = 16$
 $= 4^2$



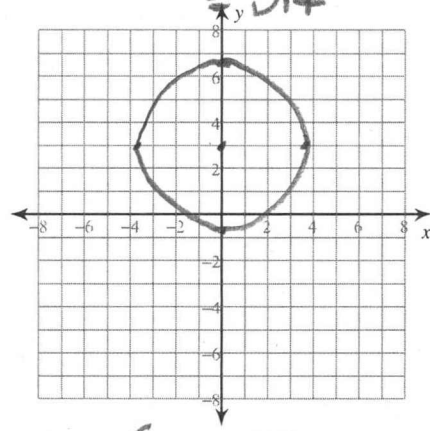
$D = \{x \mid -2 \leq x \leq 6, x \in \mathbb{R}\}$
 $R = \{y \mid -5 \leq y \leq 3, y \in \mathbb{R}\}$

3) $(x - 1)^2 + (y + 4)^2 = 9$
 $= 3^2$



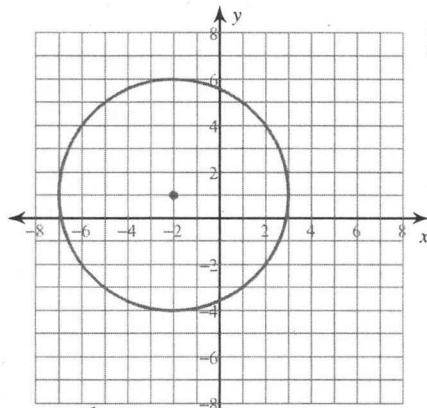
$D = \{x \mid -2 \leq x \leq 4, x \in \mathbb{R}\}$
 $R = \{y \mid -7 \leq y \leq -1, y \in \mathbb{R}\}$

4) $x^2 + (y - 3)^2 = 14$
 $= \sqrt{14}$



$D = \{x \mid -\sqrt{14} \leq x \leq \sqrt{14}, x \in \mathbb{R}\}$
 $R = \{y \mid (3 - \sqrt{14}) \leq y \leq (3 + \sqrt{14}), y \in \mathbb{R}\}$

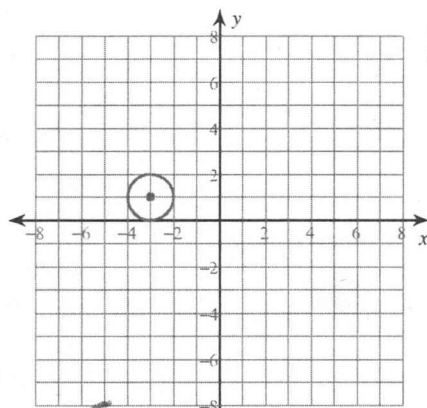
5) $y^2 + 4x - 20 - 2y = -x^2$



Center: (-2, 1)
Radius: 5

$D = \{x \mid -7 \leq x \leq 3, x \in \mathbb{R}\}$
 $R = \{y \mid -4 \leq y \leq 6, y \in \mathbb{R}\}$

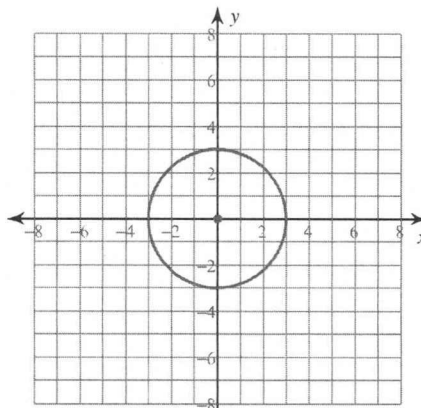
7) $9 = 2y - y^2 - 6x - x^2$



Center: (-3, 1)
Radius: 1

$D = \{x \mid -4 \leq x \leq -2, x \in \mathbb{R}\}$
 $R = \{y \mid 0 \leq y \leq 2, y \in \mathbb{R}\}$

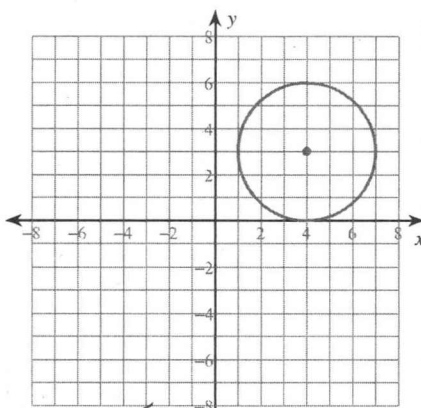
6) $-9 = -y^2 - x^2$



Center: (0, 0)
Radius: 3

$D = \{x \mid -3 \leq x \leq 3, x \in \mathbb{R}\}$
 $R = \{y \mid -3 \leq y \leq 3, y \in \mathbb{R}\}$

8) $16 + x^2 + y^2 - 8x - 6y = 0$



Center: (4, 3)
Radius: 3

$D = \{x \mid 1 \leq x \leq 7, x \in \mathbb{R}\}$
 $R = \{y \mid 0 \leq y \leq 6, y \in \mathbb{R}\}$

Use the information provided to write the equation of each circle.

9) Center: (13, -13) Radius: 4
 $(x - 13)^2 + (y + 13)^2 = 16$
 $D = \{x \mid 9 \leq x \leq 17, x \in \mathbb{R}\}$
 $R = \{y \mid -17 \leq y \leq -9, y \in \mathbb{R}\}$

10) Center: (-13, -16) Point on Circle: (-10, -16)
 $(x + 13)^2 + (y + 16)^2 = 9$

$D = \{x \mid -16 \leq x \leq -10, x \in \mathbb{R}\}$
 $R = \{y \mid -19 \leq y \leq -13, y \in \mathbb{R}\}$

11) Ends of a diameter: (18, -13) and (4, -3)

12) Center: (10, -14) Tangent to $x = 13$
 $(x - 10)^2 + (y + 14)^2 = 9$

$D = \{x \mid 7 \leq x \leq 13, x \in \mathbb{R}\}$
 $R = \{y \mid -17 \leq y \leq -11, y \in \mathbb{R}\}$

$(x - 11)^2 + (y + 8)^2 = 74$
 $D = \{x \mid (11 - \sqrt{74}) \leq x \leq (11 + \sqrt{74}), x \in \mathbb{R}\}$
 $R = \{y \mid (-8 - \sqrt{74}) \leq y \leq (-8 + \sqrt{74}), y \in \mathbb{R}\}$

13) Center lies in the first quadrant Tangent to $x = 8$, $y = 3$, and $x = 14$

14) Center: (0, 13) Area: 25π

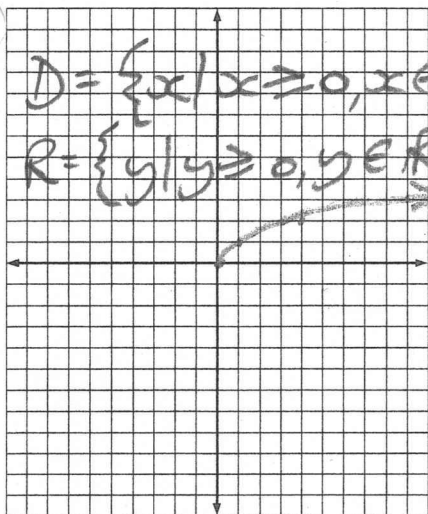
$(x - 11)^2 + (y - 6)^2 = 9$
 $D = \{x \mid 8 \leq x \leq 14, x \in \mathbb{R}\}$
 $R = \{y \mid 3 \leq y \leq 9, y \in \mathbb{R}\}$

$x^2 + (y - 13)^2 = 25$
 $D = \{x \mid -5 \leq x \leq 5, x \in \mathbb{R}\}$
 $R = \{y \mid 8 \leq y \leq 18, y \in \mathbb{R}\}$

ROOT GRAPHS

Name: _____

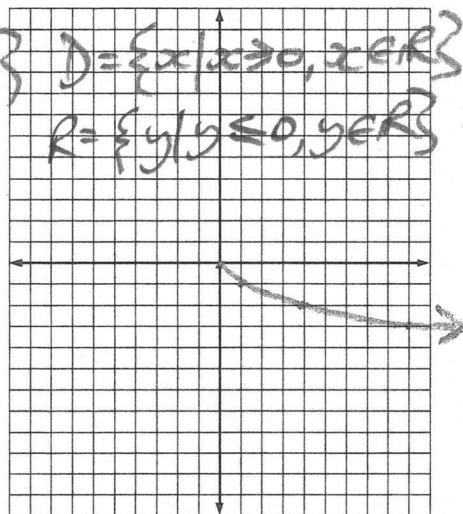
Date: _____



$$D = \{x | x \geq 0, x \in \mathbb{R}\}$$

$$R = \{y | y \geq 0, y \in \mathbb{R}\}$$

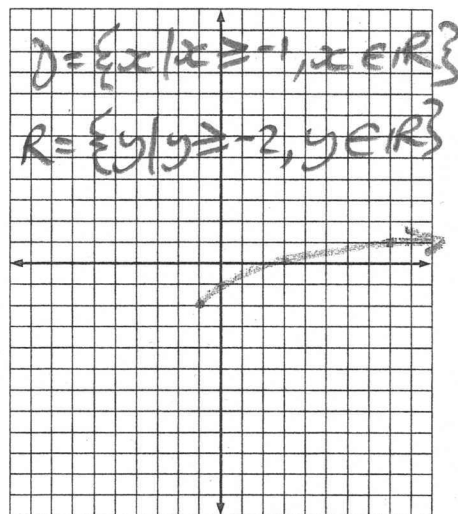
$$y = \sqrt{x}$$



$$D = \{x | x \geq 0, x \in \mathbb{R}\}$$

$$R = \{y | y \leq 0, y \in \mathbb{R}\}$$

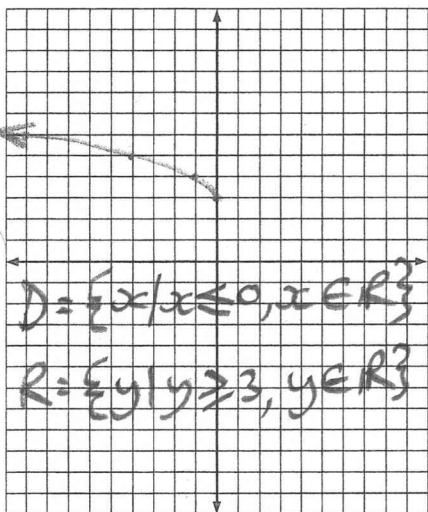
$$y = -\sqrt{x}$$



$$D = \{x | x \geq -1, x \in \mathbb{R}\}$$

$$R = \{y | y \geq -2, y \in \mathbb{R}\}$$

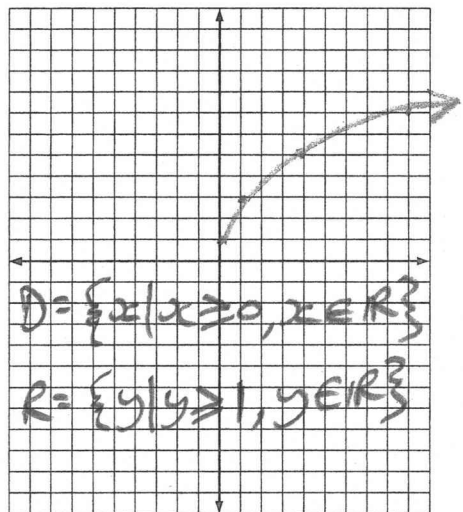
$$y = \sqrt{x+1} - 2$$



$$D = \{x | x \leq 3, x \in \mathbb{R}\}$$

$$R = \{y | y \geq 0, y \in \mathbb{R}\}$$

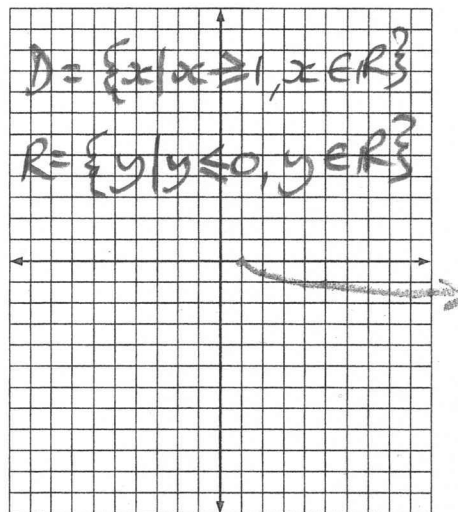
$$y = \sqrt{-(x)+3}$$



$$D = \{x | x \geq 0, x \in \mathbb{R}\}$$

$$R = \{y | y \geq 1, y \in \mathbb{R}\}$$

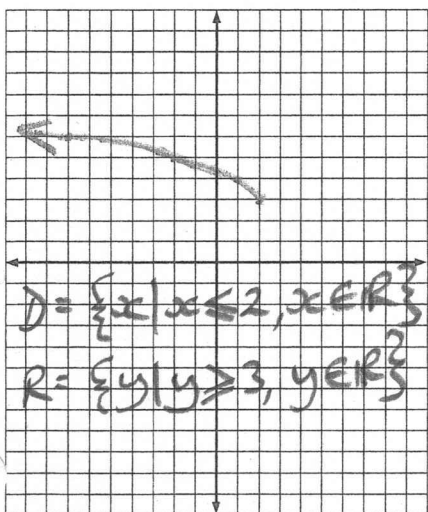
$$y = 2\sqrt{x} + 1$$



$$D = \{x | x \geq 1, x \in \mathbb{R}\}$$

$$R = \{y | y \leq 0, y \in \mathbb{R}\}$$

$$y = -\frac{1}{2}\sqrt{x-1}$$



$$D = \{x | x \leq 5, x \in \mathbb{R}\}$$

$$R = \{y | y \geq 0, y \in \mathbb{R}\}$$

$$y = \sqrt{-(x-2)+3}$$

