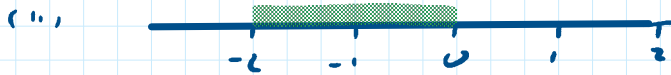


What is green distance



(i) Distance = 2

(ii) Distance = 2.

Absolute value means answer has to be positive.

$$|x| = \text{absolute value of } x.$$

$$|x| = 5 \text{ find } x.$$

$$\pm x = 5$$

$$x = \pm 5$$

$$|x - 2| = 3 \Rightarrow \pm (x - 2) = 3$$

$$x - 2 = 3$$

$$x = 5$$

$$x - 2 = -3$$

$$x = -1.$$

Method 2: Square both sides.

$$|x - 2| = 3$$

$$x^2 - 4x + 4 = 9$$

$$x^2 - 4x - 5 = 0$$

$$(x - 5)(x + 1) = 0$$

$$x = 5 \quad x = -1$$

Solve $|x-1| = 4$

$$\pm(x-1) = 4$$

$$x-1 = \pm 4$$

$$x-1 = 4$$

$$x = 5$$

$$x-1 = -4$$

$$x = -3$$

$$(x-1)^2 = 4^2$$

$$x^2 - 2x + 1 = 16$$

$$x^2 - 2x - 15 = 0$$

$$(x-5)(x+3) = 0$$

$$x = 5 \quad x = -3$$

$$y = |x-1|$$

$$y = x-1$$

y must be positive

x-axis $y = 0$

$$x-1 = 0$$

$$x = 1$$

$$(1, 0)$$

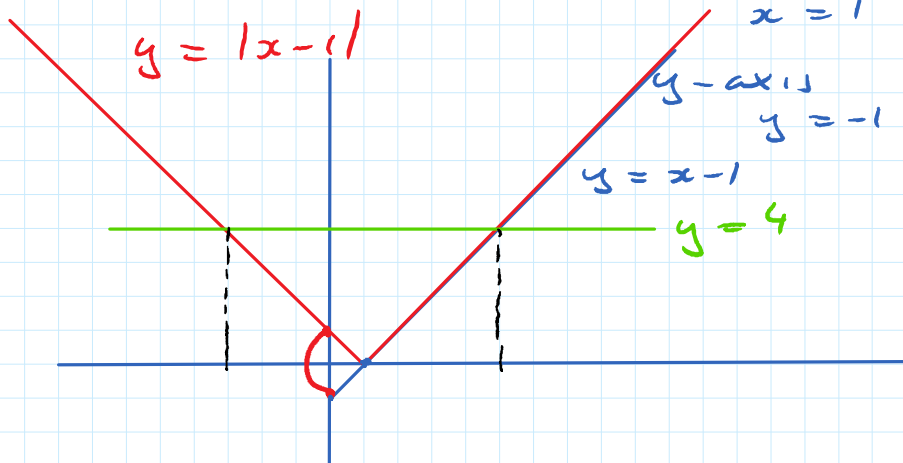
y-axis $x = 0$

$$y = -1$$

$$(0, -1)$$

$$y = x-1$$

$$y = 4$$



Absolute value || - positive
Method (1) +/-

Method (2) Square

Method (3) Diagram



Use a diagram to solve

(1) $|x-3| = 2$

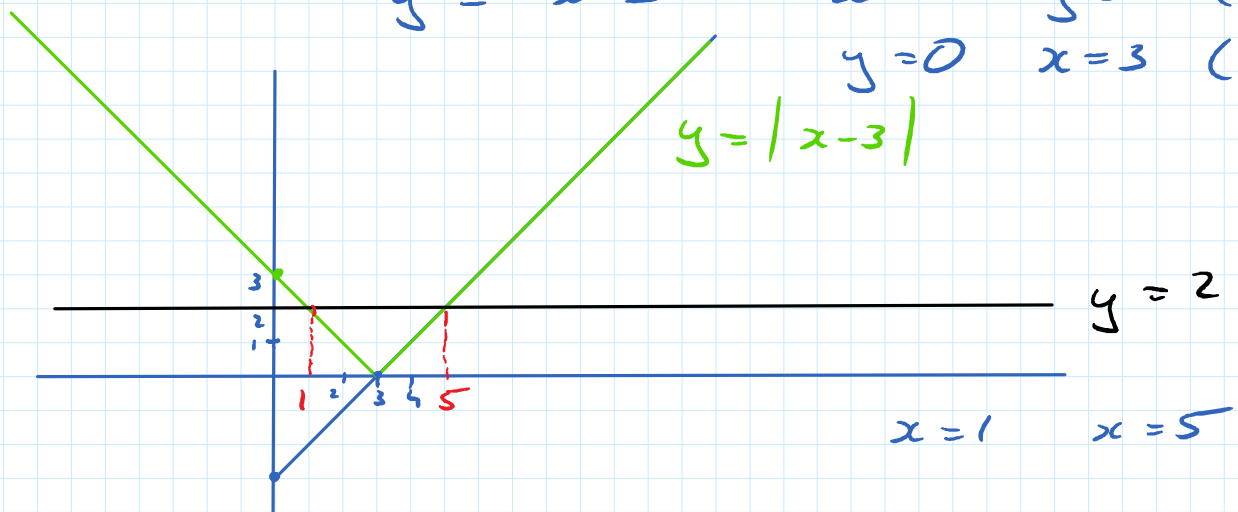
$y = |x-3|$ $y = 2$

$y = |x-3|$

$y = x-3$

$x=0$ $y=-3$ $(0,-3)$

$y=0$ $x=3$ $(3,0)$



$|x-3| = 2$

$x-3 = 2$

$x = 5$

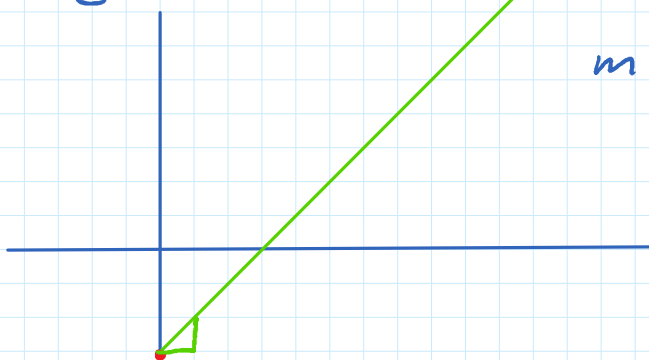
$x-3 = -2$

$x = 1$

$y = x-3$

$(0,-3)$

$m = 1$

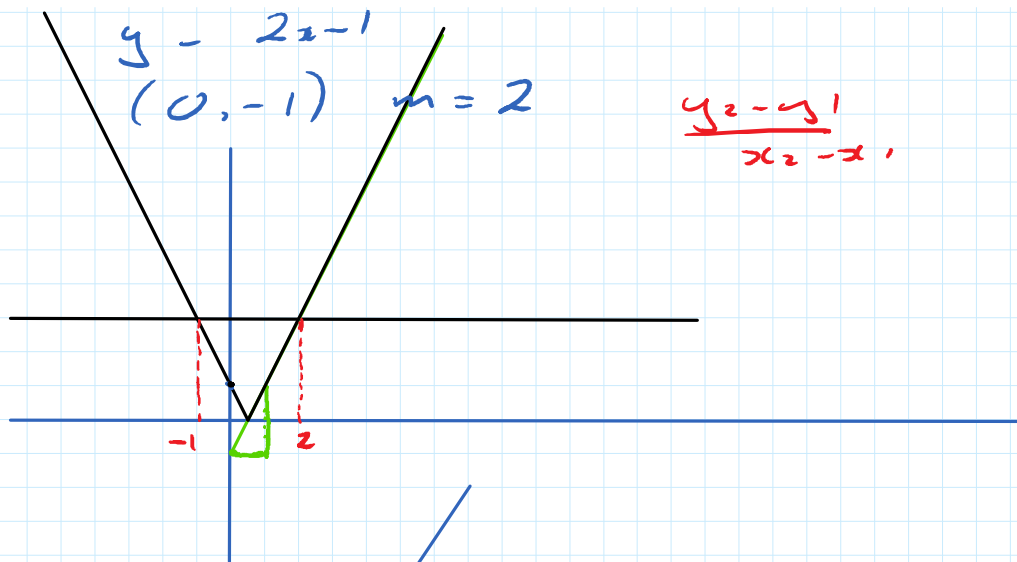


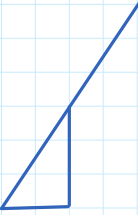
Solve

$|2x-1| = 3$

$= |2x-1|$

$y = 3$



$m = \frac{3}{2}$  change.

$m = -\frac{3}{2}$ 