

### 5.8 Solving Quadratic Inequalities

Obj: 1. Write, solve & graph a quad. ineq in 1 variable.  
 2. " " " " " " " " " " " "

$$x^2 - 2x - 15 \geq 0$$

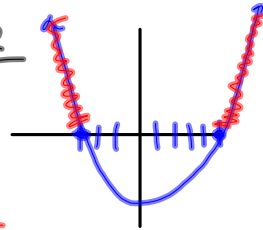
$$|x^2 - 2x - 15 = 0$$

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

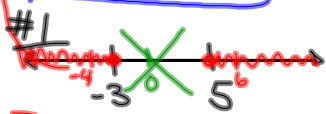
$$x-5=0 \quad x+3=0$$

$$\boxed{x=5 \quad x=-3}$$

#2



$$(-\infty, -3] \cup [5, \infty) *$$



Test:  $16 + 8 - 15 \geq 0$   
 $9 \geq 0 \checkmark$   
 $0^2 - 0 - 15 \geq 0$   
 $-15 \geq 0 \times$   
 $36 - 12 - 15 \geq 0$   
 $9 \geq 0 \checkmark$

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$$x^2 - 8x + 12 \leq 0$$

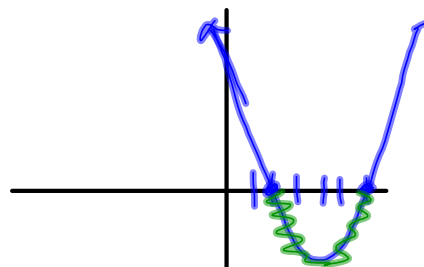
$$|x^2 - 8x + 12 = 0$$

$$-6 \cdot 2$$

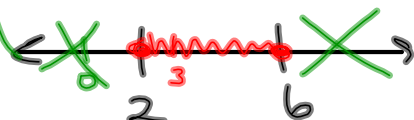
$$(x-6)(x-2) = 0$$

$$x-6=0 \quad x-2=0$$

$$x=6 \quad x=2$$



$$[2, 6]$$



Test:  $0^2 - 0 + 12 \leq 0$   
 $12 \leq 0 \times$   
 $9 - 24 + 12 \leq 0$   
 $-3 \leq 0 \checkmark$

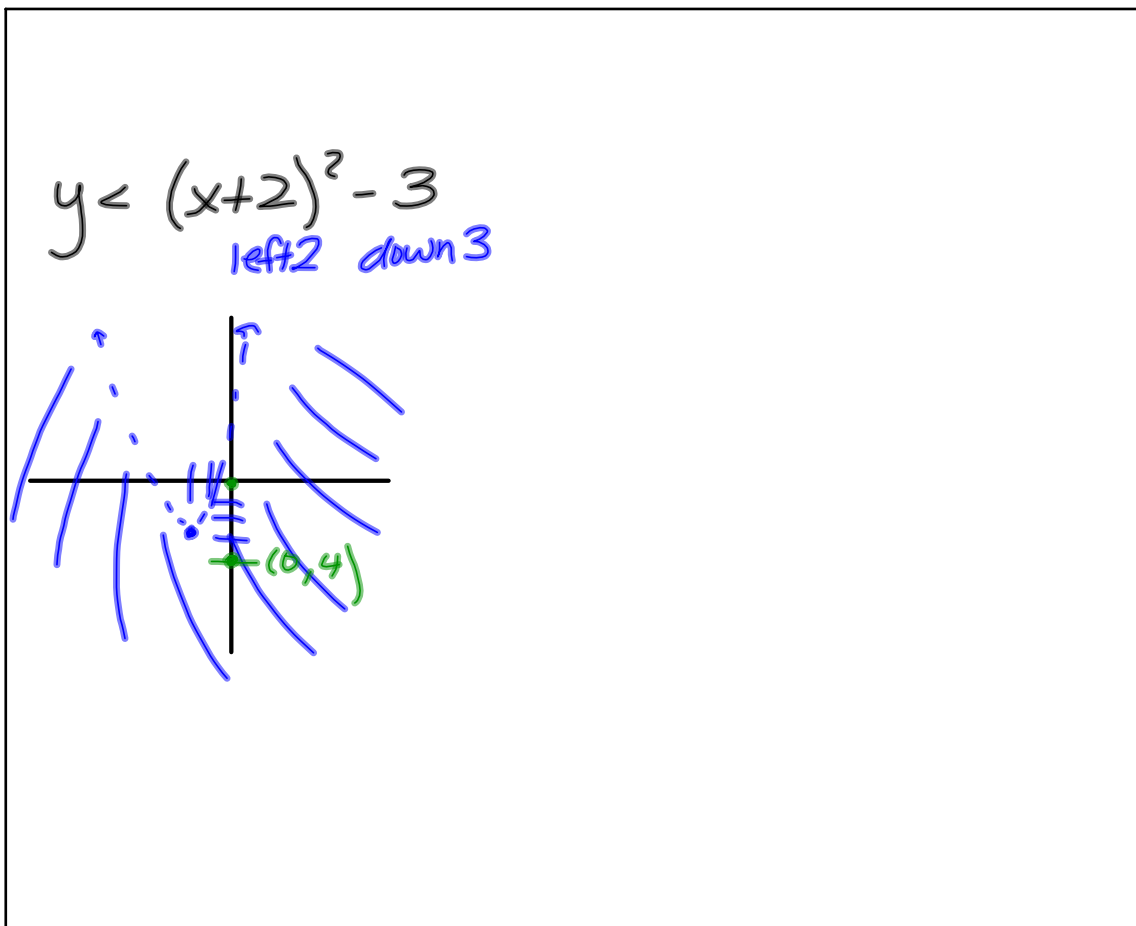
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$-(x+1)^2 > 0$        $-(x+1)^2 \geq 0$   
 refl. over x-axis      left 1  
 no sol.       $x = -1$   
 $-(x+1)^2 \leq 0$   
 $(-\infty, \infty)$   
 $-(x+1)^2 < 0$   
 $(-\infty, -1) \cup (-1, \infty)$   
 $* x \neq -1$

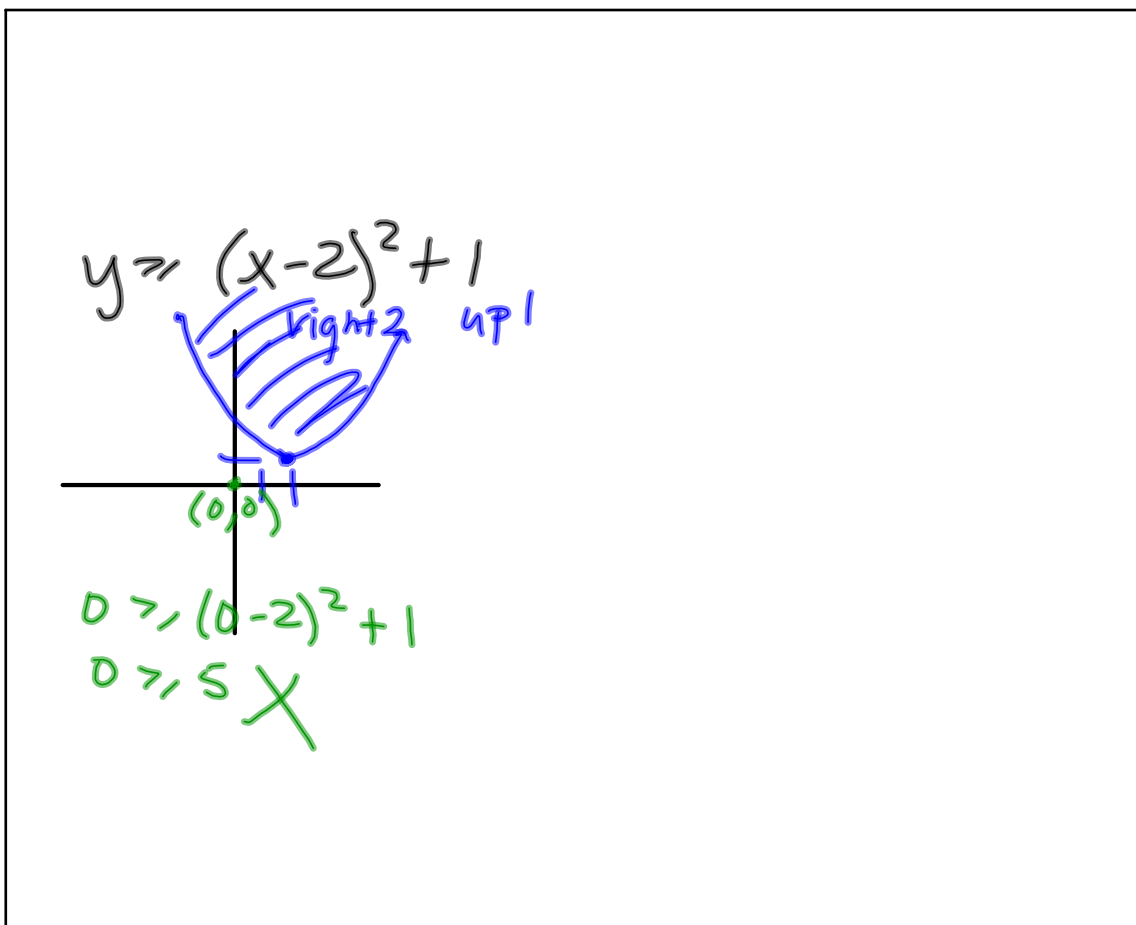
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$y \geq 2x + 4$   
 $y = 2x + 4$

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