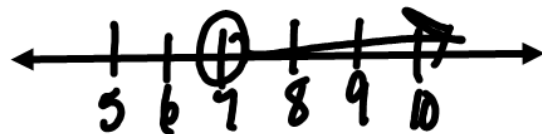


5.8 Quadratic Inequalities

$x > 0$	positive
$x \geq 0$	positive or 0
$x < 0$	negative
$x \leq 0$	negative or 0

$x > 7$
a lot

$x = 7$
one



$$x^2 - 4x - 5 < 0 \quad \text{neg} < 0 \quad \text{Set to } \geq 0$$

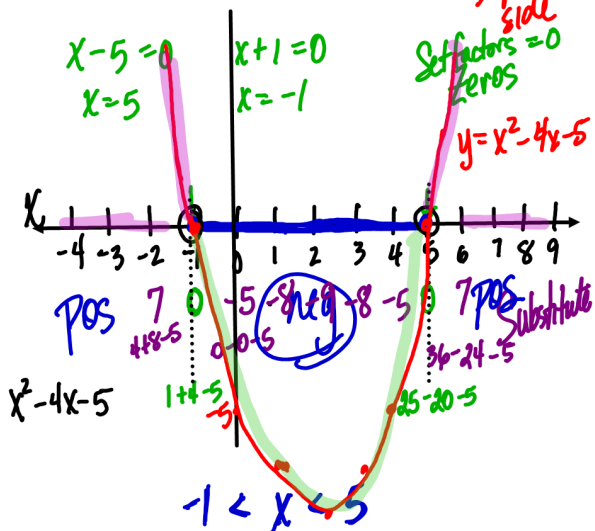
$$(x-5)(x+1) < 0 \quad \text{factor left-hand side}$$

$$x-5=0 \\ x=5$$

$$x+1=0 \\ x=-1$$

Set factors = 0
zeros

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



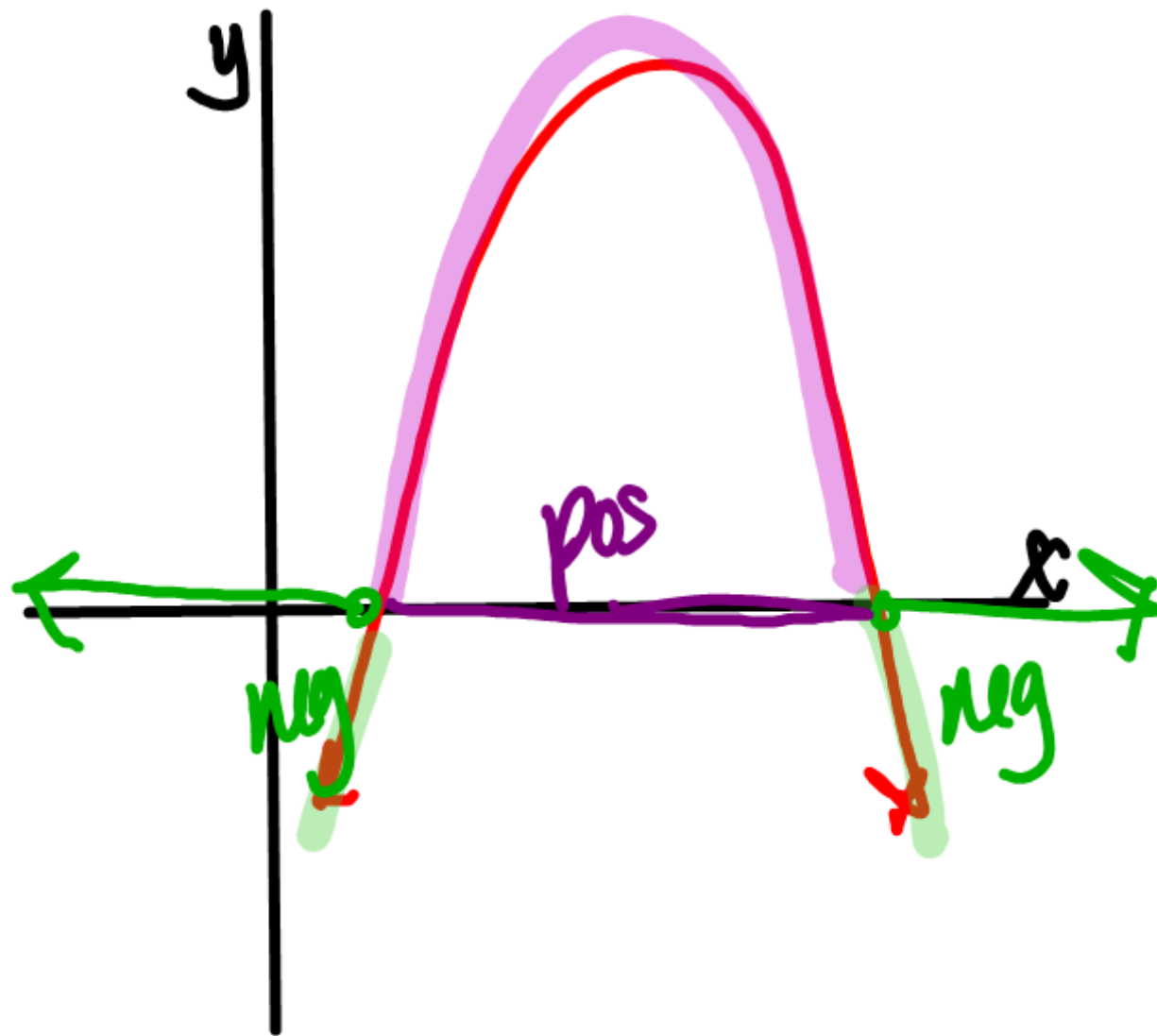
$$x^2 - 4x - 5 < 0$$

$$0^2 - 4(0) - 5 < 0 \\ -5 < 0 \quad \text{True}$$

$$4 - 8 - 5 \\ -9$$

$$1^2 - 4(1) - 5 < 0$$

$$1 - 4 - 5 < 0 \\ -8 < 0 \quad \text{True}$$



$$x^2 + 3x - 18 \geq 0$$

Set to 0

$$(x + 6)(x - 3) \geq 0$$

factor

$$x + 6 = 0$$

$$x - 3 = 0$$

Set factors = 0

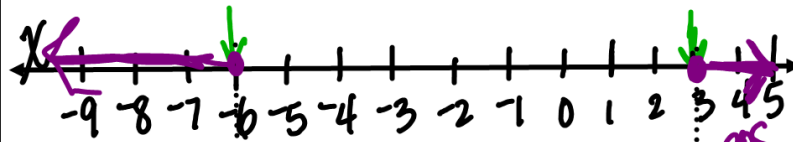
$$x = -6$$

$$x = 3$$

Zeros

$$x^2 + 3x - 18 \geq 0 \text{ pos}$$

number line



pos 10

neg -18

pos 10
Substitute

$$(-7)^2 + 3(-7) - 18$$

$$0^2 + 3(0) - 18$$

$$4^2 + 3(4) - 18$$

$$49 - 21 - 18$$

$$-18$$

$$16 + 12 - 18$$

$$28 - 18$$

$$28 - 18$$

$$10$$

$$10$$

$$x \leq -6 \text{ or } x \geq 3$$

p334

$$12 - 32 \times 4$$

$$x^2 - 1 \geq 0$$

$$(x+1)(x-1) \geq 0$$

factor

$$x+1=0$$

$$x-1=0$$

$$x=-1$$

$$x=1$$

Set = 0
Zeros