

Name \_\_\_\_\_

Unit 3 McDougal Little Resource  
p. 15, Algebra 2 with Analysis

Unit 3 Holt Resource  
p. 33, Algebra 2 with Analysis

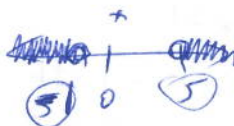
### Solving Polynomial Inequalities Algebraically

Solve the following inequalities. Show your work.

1.  $x^2 - 4x - 5 > 0$   
 $(x-5)(x+1) > 0$

$x = 5, -1$

$-5 > 0$   
 $x$



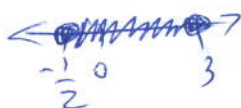
$x < -1$  or  $x > 5$

2.  $2x^2 - 5x - 3 \leq 0$

$(2x+1)(x-3) \leq 0$

$-3 \leq 0$

$x = -\frac{1}{2}, 3$



$-\frac{1}{2} \leq x \leq 3$

3.  $x(x-2)(x+3) < 0$

$1(-1)(4) \leq 0$   
 $-4 < 0 \checkmark$



$x < -3 \cup 0 < x < 2$

4.  $(x-2)(2x+5)(3x-10) \geq 0$

$x = 2, -\frac{5}{2}, \frac{10}{3}$

$(-2)(5)(-10) \geq 0$   
 $100 \geq 0$



$-\frac{5}{2} \leq x \leq 2 \cup x \geq \frac{10}{3}$

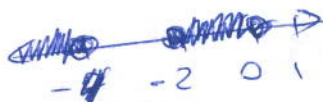
5.  $x^3 + 6x^2 + 8x \leq 0$

$x(x^2 + 6x + 8) \leq 0$

$x = 0, -2, -4$

$x(x+2)(x+4) \leq 0$

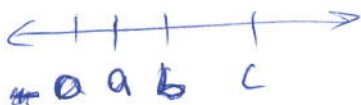
$1(3)(5) \leq 0$   
 $15 \leq 0$



6.  $x^3 - 4x^2 > 0$

$x \leq -4 \cup -2 \leq x \leq 0$

7.  $(x+a)(x-b)(x-c) \leq 0$ , where  $a, b,$  and  $c$  are positive integers such that  $a < b < c$ .



$b \leq x \leq c$