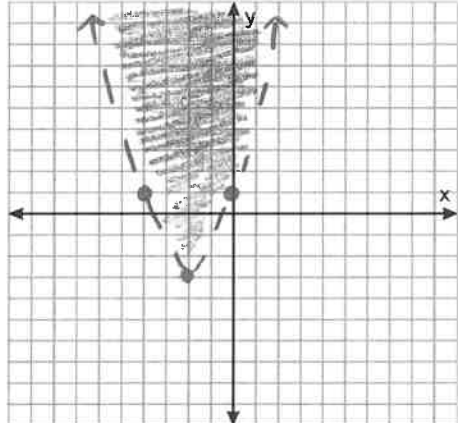
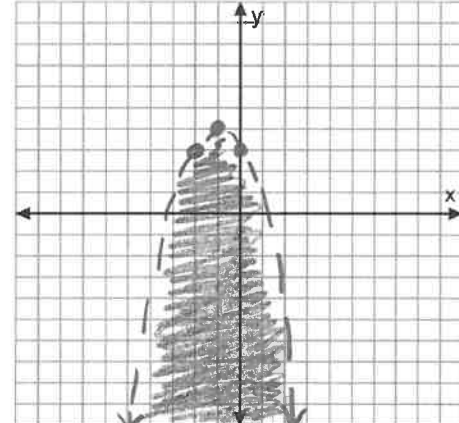
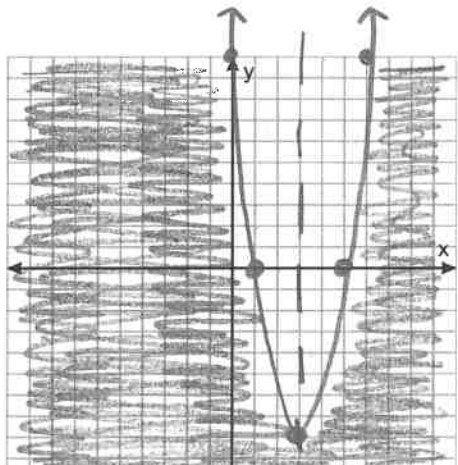
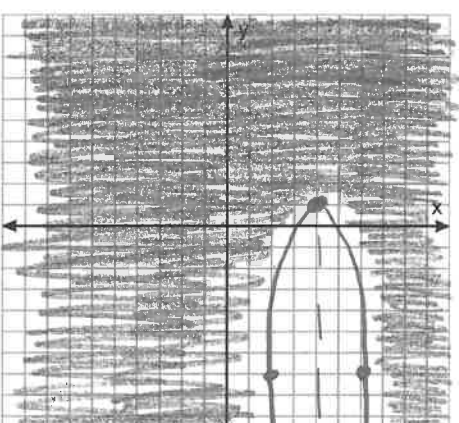


4.8 Graph Quadratic Inequalities
Honors Algebra 2

To Graph a Quadratic Inequality in Two Variables:

1. Graph the parabola boundary (solid or dashed)
2. Pick a test point NOT on the boundary to determine if it is a solution to the inequality.
3. If it is a solution, shade the part of the plane that contains the point. If it is not a solution, shade the part of the plane that does not contain the point.

Graph each quadratic inequality

<p>1. $y > (x-2)^2 - 3$ dotted</p> <p>$y = (0-2)^2 - 3$ $= 1$</p> 	<p>2. $y < -(x+1)^2 + 4$ dotted</p> <p>$y = -(0+1)^2 + 4$ $= 3$</p> 
<p>3. $y \leq 2(x-5)(x-1)$ solid</p> <p>y-int = 10 1, 5 = x-int</p> 	<p>4. $y \geq -2x^2 + 16x - 31$ solid</p> <p>$x = \frac{-16}{2(-2)} = +4$ $y(+4) = -2(+4)^2 + 16(+4) - 31$ $= -32 + 64 - 31$ $= 1$</p> 

x	y
2	-7

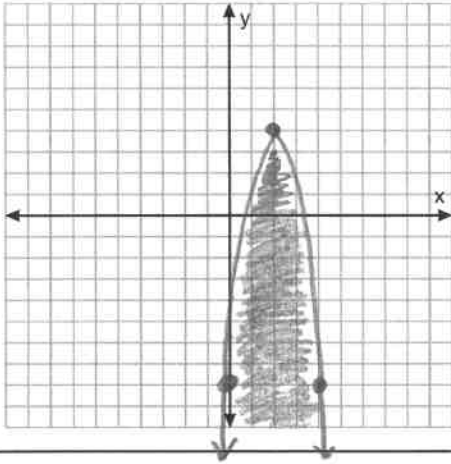
Aos $x=3$
 $y(3) = 2(3-5)(3-1)$
 $= -8$
 vertex $(3, -8)$

4.8 Graph Quadratic Inequalities
Honors Algebra 2

5. $y \leq -3(x-2)^2 + 4$ solid

$$y = -3(0-2)^2 + 4$$

$$= -8$$



Solve each quadratic inequality algebraically

1. $x^2 - 3x \leq 18$

$$x^2 - 3x - 18 \leq 0$$

"where is quad neg & 0
i.e., where is it below x-axis"
changes from above axis to
below or vice versa at x-int

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

$$x = 6 \text{ and } x = -3$$



$$[-3, 6]$$

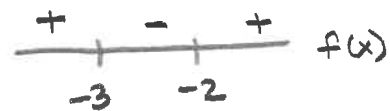
brackets b/c
equal to 0

2. $x^2 + 5x < -6$

$$x^2 + 5x + 6 < 0$$

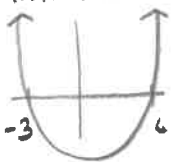
$$(x+3)(x+2) < 0$$

$$x = -3 \quad x = -2$$



$$(-3, -2)$$

line
is graph
just providing
info needed



4.8 Graph Quadratic Inequalities
Honors Algebra 2

3. $x^2 + 11x + 30 \geq 0$

$(x+6)(x+5) \geq 0$

$x = -6 \quad x = -5$



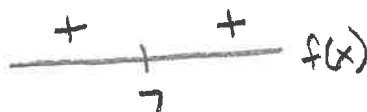
$(-\infty, -6] \cup [-5, \infty)$

4. $x^2 - 14x > -49$

$x^2 - 14x + 49 > 0$

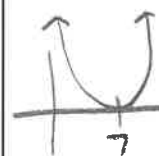
$(x-7)^2 > 0$

$x = 7$



$(-\infty, 7) \cup (7, \infty)$

* not including 7 *



$x^2 - 14x + 49 \geq 0$

$(-\infty, \infty)$

5. $x^2 - 4x \leq 21$

$x^2 - 4x - 21 \leq 0$

$(x+3)(x-7) \leq 0$

$x = 7, -3$



$[-3, 7]$

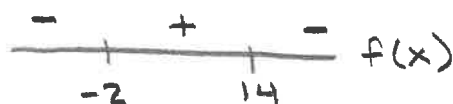
6. $-x^2 + 12x \geq 28$

$-x^2 + 12x + 28 \geq 0$

$-(x^2 - 12x - 28) \geq 0$

$-(x-14)(x+2) \geq 0$

$x = 14, -2$



$[-2, 14]$

