

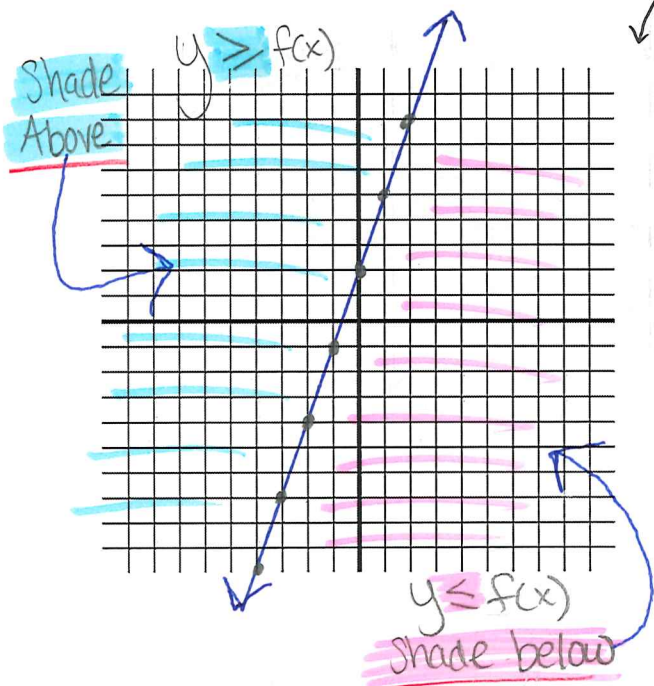
Section 3.3: INEQUALITIES IN TWO VARIABLES

Essential Question:

What is the difference between graphing an equation versus an inequality?

**Linear Equation vs. Inequality**

Example:  $y = 3x + 2$

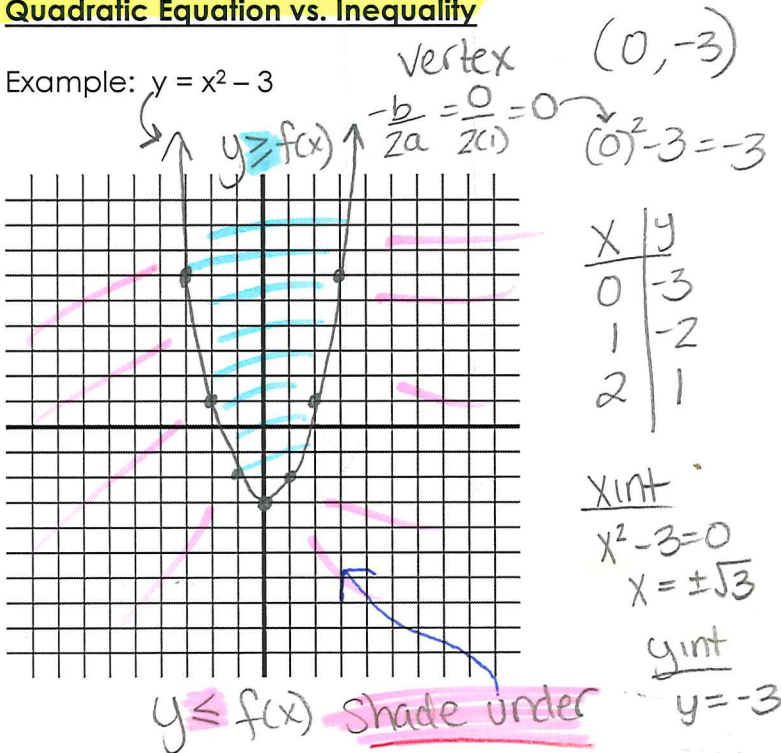


\*Note



**Quadratic Equation vs. Inequality**

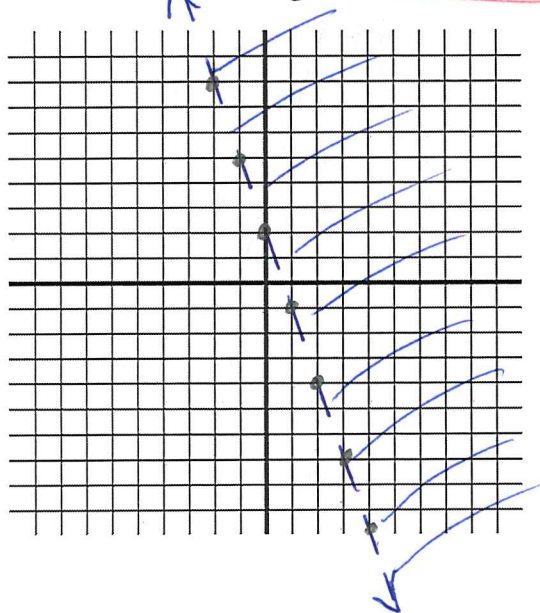
Example:  $y = x^2 - 3$



**EXAMPLES:** Graph each of the following.

1)  $y + 3x > 2$

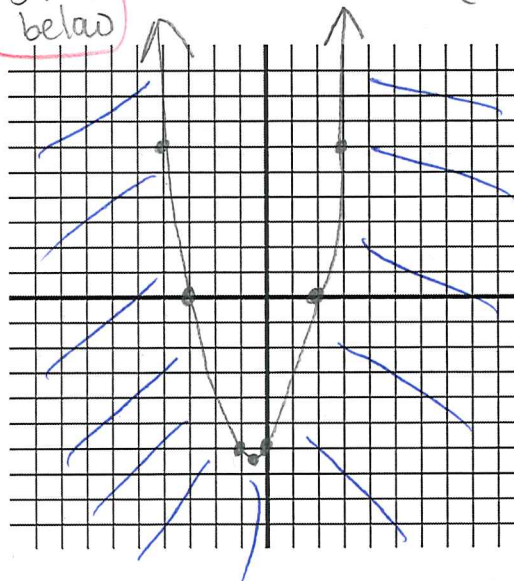
dash  $y > -3x + 2$   
 $y >$  shade above



2)  $y \leq x^2 + x - 6$

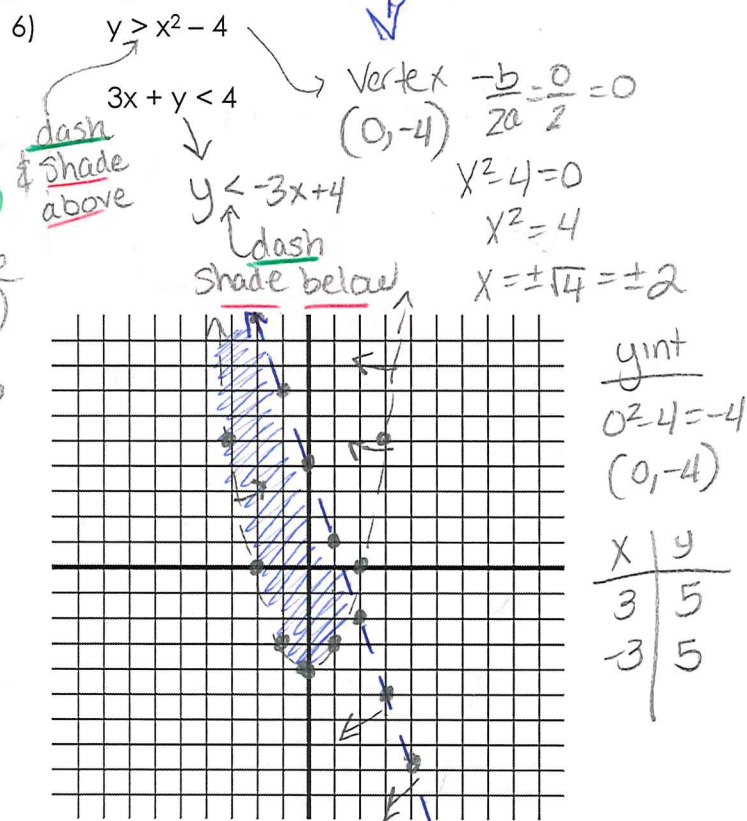
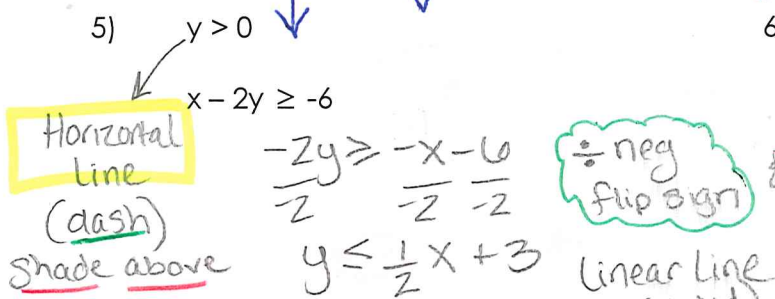
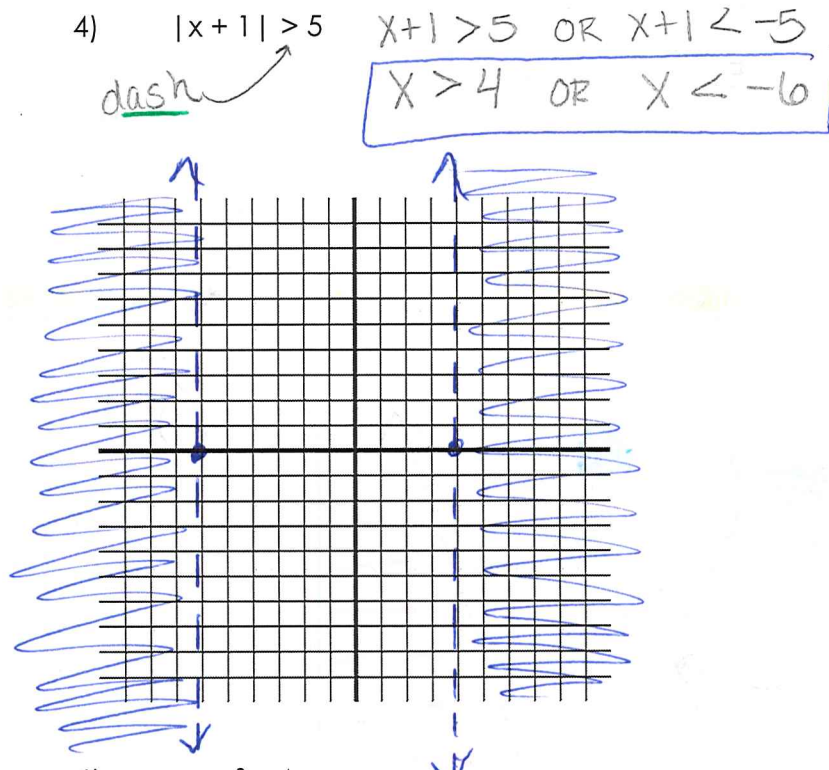
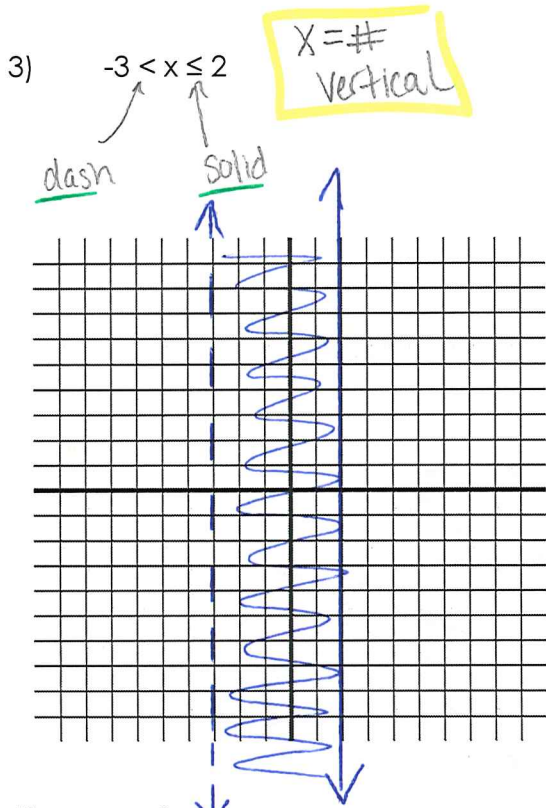
solid  
 $(x+3)(x-2)$   
 $x = -3$   $x = 2$   
 vertex  $-\frac{b}{2a} = \frac{-1}{2}$   
 $(-\frac{1}{2}, -6.25)$   
 $(-\frac{1}{2})^2 + (-\frac{1}{2}) - 6 = -6.25$

$\leq$  Shade below



y-int  
 $0^2 + 0 - 6 = -6$   
 $y = -6$   
 $(0, -6)$

x	y
3	6
-4	6



Section 3.3 Summary:

An equation is a solid line a no shading. Solutions to an equation are "on" the line/curve. An inequality is either dash ( $>$   $<$ ) or solid ( $\geq$   $\leq$ ) and has shading ( $>$   $\geq$ ) above ( $<$   $\leq$ ) below. Solutions to an inequality are within the shaded region.