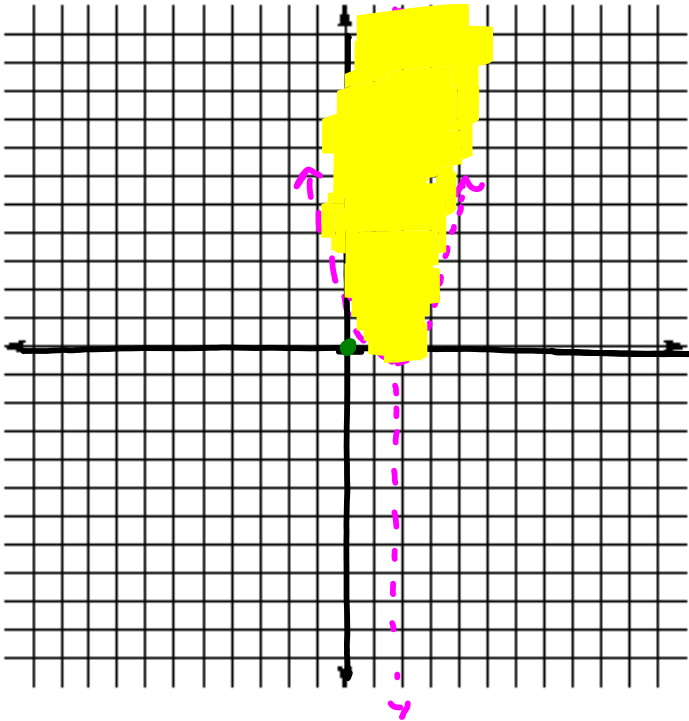


# SOLVING QUADRATIC INEQUALITIES

Objective: To solve quadratic inequalities 1) by graphing and 2) algebraically (using sign analysis).

Ex1:  $x^2 - 3x + 2$   
 $0 > 0 - 0 + 2$   
 $0 > 2$  F

$$X = \frac{-b}{2a} = \frac{-(-3)}{2(1)} = \left(\frac{3}{2}, -\frac{1}{4}\right)$$



$$\begin{aligned} \left(\frac{3}{2}\right)^2 - 3\left(\frac{3}{2}\right) + 2 \\ \frac{9}{4} - \frac{9}{2} + 2 \\ \frac{9}{4} - \frac{18}{4} + \frac{8}{4} \end{aligned}$$

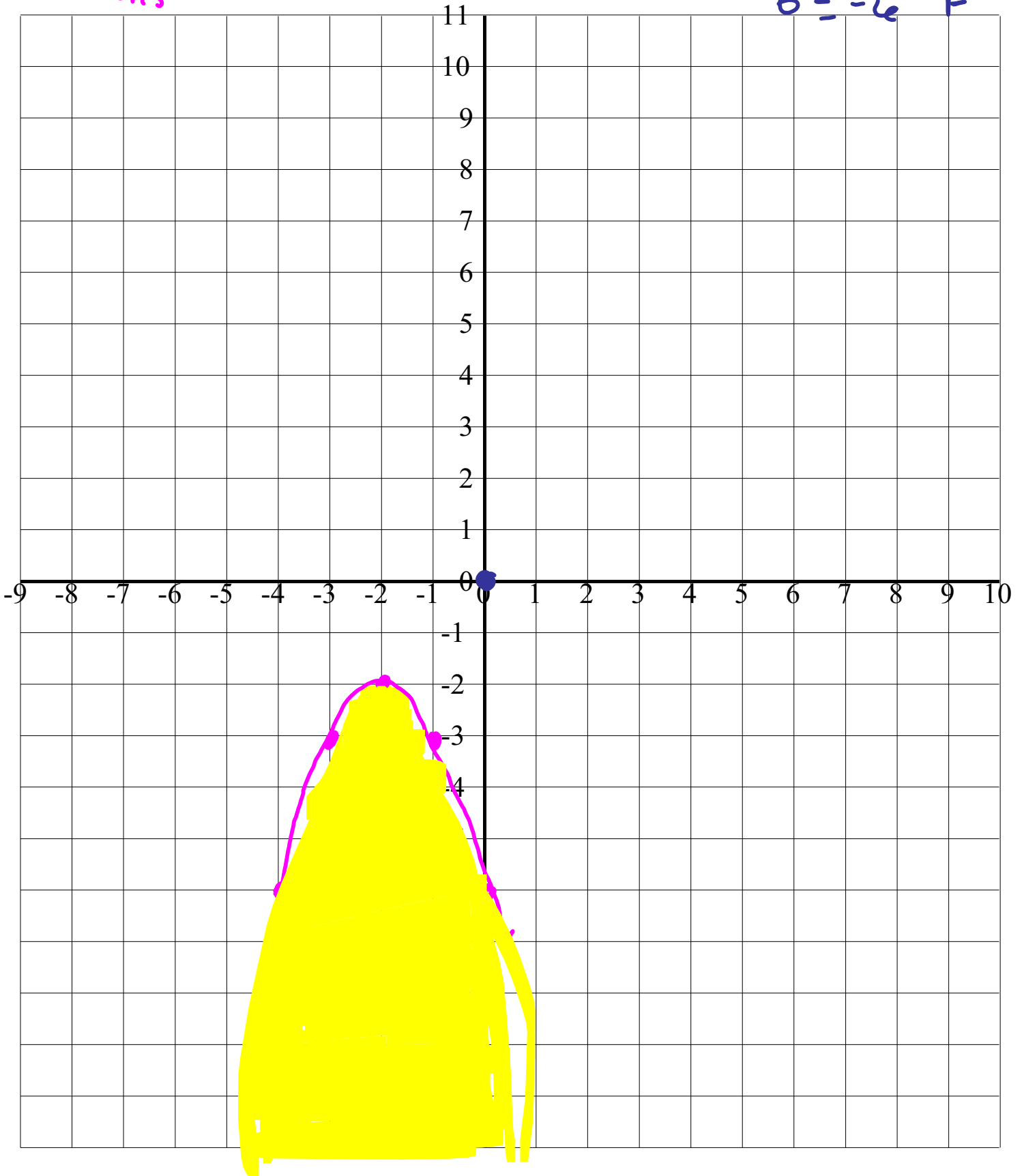
$$\begin{aligned} (2)^2 - 3(2) + 2 \\ 4 - 6 + 2 = 0 \end{aligned}$$

$$\begin{aligned} (3)^2 - 3(3) + 2 \\ 9 - 9 + 2 = 2 \end{aligned}$$

$$(2, 0) \quad (3, 2)$$

$y \leq - (x+2)^2 - 2$  Coordinate Grid Paper  
L2 D2  
flip  
x-axis

$0 \leq -(0+2)^2 - 2$   
 $0 \leq -4 - 2$   
 $0 \leq -6$  F



# Sign Analysis

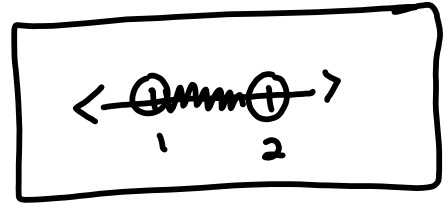
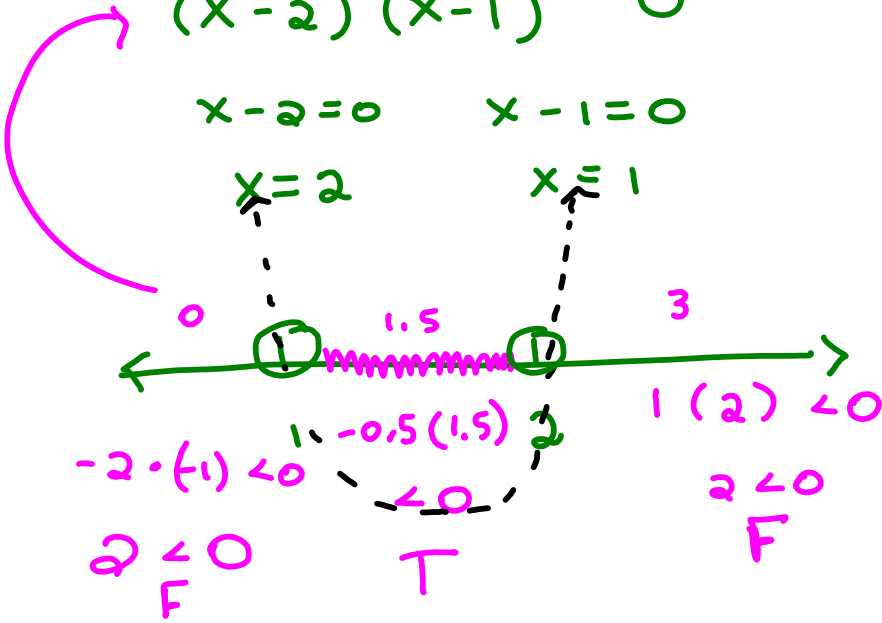
Ex 3:  $x^2 - 3x + 2 < 0$

$(x - 2)(x - 1) < 0$

$x - 2 = 0$        $x - 1 = 0$

$x = 2$

$x = 1$



$(1, 2)$

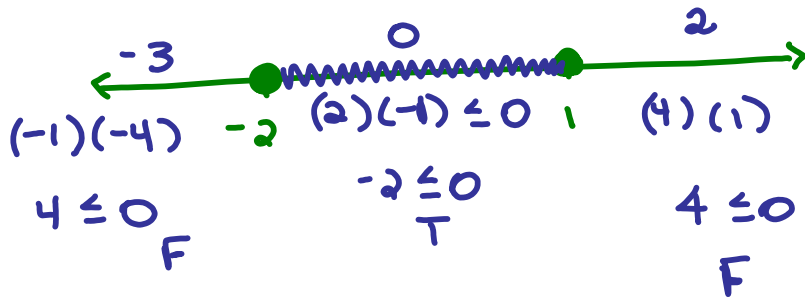
Ex 4:  $x^2 + x - 2$

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

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

$$x = -2 \quad x = 1$$

$$[-2, 1]$$



You try:  $x^2 - x - 12 > 0$

