

Due date: \_\_\_\_\_

Name: \_\_\_\_\_

## Getting Ready for Derivatives (Part 3)

Notesex: Solve  $x^3 - x^2 - 9x + 9 > 0$ .

$$\underbrace{x^2(x-1)} - \underbrace{9(x-1)} > 0$$

$$(x-1)(x^2-9) > 0$$

$$(x-1)(x+3)(x-3) > 0$$



$$(x-1)(x+3)(x-3) \quad - \quad 0 \quad + \quad 0 \quad - \quad 0 \quad +$$

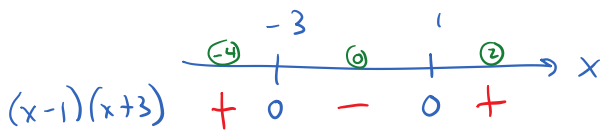
$$(-)(-)(-) \quad (-)(+)(-) \quad (+)(+)(-) \quad (+)(+)(+)$$

$$\text{Solution: } \boxed{(-3, 1) \cup (3, \infty)}$$

1. Solve the following inequalities.

a)  $x^2 + 2x - 3 < 0$

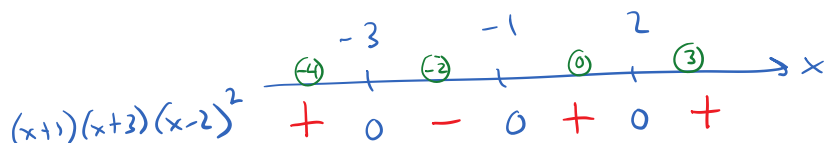
$$(x-1)(x+3) < 0$$



$$\text{Solution: } \boxed{(-3, 1)}$$

b)  $(x+1)(x+3)(x-2)^2 \geq 0$

$$\begin{array}{ccc} \uparrow & \uparrow & \uparrow \\ -1 & -3 & 2 \end{array}$$



$$\text{Solution: } \boxed{(-\infty, -3] \cup [-1, \infty)}$$

