MATH 102, Spring 2023 **Name:** _____
In class work 7 **Row and Seat:** _____

> "*Some things will drop out of the public eye and go away, but there will always be science, engineering, and technology. And there will always, always be mathematics.*"
> KATHERINE JOHNSTON

In class work 7 has questions 1 through 1 with a total of 10 points. This assignment is due at the end of the class period (9:55 AM). This assignment is printed on **both** sides of the paper.

1. Follow these steps to solve the inequality $x^2 - x \geq 12$

2 (a) *Solve* the equation $x^2 - x = 12$.

Solution:

$$\begin{aligned} \left[x^2 - x = 12\right] &= \left[x^2 - x - 12 = 0\right] && \text{(subtract 12)} \\ &= [(x-4)(x+3) = 0] && \text{(factor)} \\ &= [x = 4 \text{ or } x = -3] && \text{(teacher's pet fact).} \end{aligned}$$

2 (b) Check that *both of your solutions are correct* by pasting them into the equation $x^2 - x = 12$.

Solution: Pasting in $x \to 4$ into $x^2 - x = 12$ gives

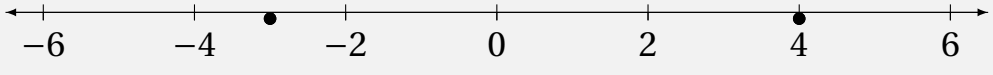
$$\left[4^2 - 4 = 12\right] = [12 = 12] = \text{True!}. \tag{1}$$

And Pasting in $x \to -3$ into $x^2 - x = 12$ gives

$$\left[(-3)^2 + 3 = 12\right] = [12 = 12] = \text{True!}. \tag{2}$$

2 (c) Put both of your solutions on a *number line*, correctly ordered from *least to greatest*.

Solution:



2 (d) Make a *table* of the intervals determined by the number line from the previous part, the test points, and the value of $x^2 - x \geq 12$ at each test point.

Solution:

Interval	**x**	$\mathbf{x^2 - x = 12}$	**true/false**
$((-\text{inf}, -3)$	-4	$(-4)^2 + 4 \leq 12$	true
$((-3, 4)$	0	$(0)^2 + 0 \leq 12$	false
$((4, \text{inf})$	5	$(5)^2 + 4 \leq 12$	true

2 (e) Finish the sentence: The solution set is