

“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.”

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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.

$$-3.4 \times 10^{-20}$$

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

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

Solution:

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

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

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

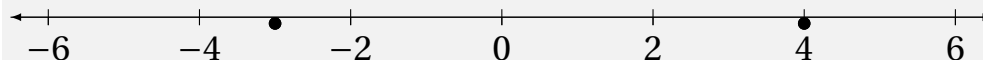
$$[4^2 - 4 = 12] = [12 = 12] = \text{True!}$$

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

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

- 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	$x^2 - x \geq 12$	true or false
$((-\infty, -3)$	-4	$(-4)^2 + 4 \geq 12$	true
$((-3, 4)$	0	$0^2 + 0 \geq 12$	false
$((4, \infty)$	5	$5^2 + 4 \geq 12$	true

- 2 (e) Finish the sentence: The solution set is $(-\infty, -3] \cup [4, \infty)$.

We include the endpoints in each interval (use a bracket, not a paren) because we're solving $x^2 - x \geq 12$. And that allows equality. Here in a bit, this rule will be modified.