

MAC 1105 Pre-Class Assignment (due 5/8 by 11:59pm):

Solving Linear Equations and an Introduction to Quadratic Equations

1. Solve the equation $3x = 15$
2. Describe in words what it means to find the solution to $3x = 15$.
3. When asked the same question, Marcos said “you need to find the number that when tripled gives you 15” and Liz said “the solution is the number that makes the right hand side of the equation equal to the left hand side of the equation.” Both students got full points for their responses. Which answer is closer to the way you think about solving an equation?
4. A lot of people answer question 2 with “isolate x” or “get x by itself”. Why are these answers insufficient?
5. What are equations like $3x = 15$ and $4 + 2x = 10$ called?
6. Now practice solving these types of equations:
 - a. $14x - 25 = 45$
 - b. $-0.75 + 4x = -10$
7. Think about the process that you went through to solve these equations. Try to write a **general** statement (one sentence only) about what the process of solving a linear equation entails. (Note: I am not asking you to describe each step.)

Checkpoint: Take a moment to think about the work you have just done in answering the questions above. You have just solidified your understanding of what linear equations are and what it means to solve them.

8. Now, try to solve the equation $x^2 - 4 = -3x$ using the process you outlined in question 7.

What happened? Why couldn't you do this?

9. Describe how the equation $x^2 - 4 = -3x$ is fundamentally different from $3x = 15$.

Try moving terms around so that you end up with just zero on the right side of the equation. So you end up with $x^2 + 3x - 4 = 0$.

10. Write down the definition of a quadratic equation from page 144 (section 1.5) in your textbook

You can see that $x^2 + 3x - 4 = 0$ is a quadratic equation. Now, the right side of this equation is a polynomial which you have seen in class last week. You have also seen how to factor a polynomial of this form.

11. Factor the polynomial $x^2 + 3x - 4 = 0$

12. Now you have _____ = 0 (fill the left side with the factored form of the polynomial $x^2 + 3x - 4 = 0$)

13. Write down the Zero Product principle from page 144 (section 1.5) of the text book and apply that to solve the equation in question 12.

14. Write the solutions to the equation $x^2 + 3x - 4 = 0$

15. Write the steps to solving a quadratic equation $ax^2 + bx + c = 0$ by factoring and in your notebook try out examples from Pages 144,145,146 of the textbook

16. What happens if you have a prime polynomial on the left side of the quadratic equation that you need to solve? Check out page 152 (section 1.5) of the textbook to see another method of solving quadratic equations.

17. Write down the quadratic formula from page 152 (Section 1.5)