

Name: _____ Course/Section: _____ Instructor: _____

Chapter 3 Algebraic Expressions and Linear Equations

3.4 Solving Linear Equations

Linear Equations in One Variable ~ Solving Linear Equations Algebraically ~ Solving Linear Equations Numerically ~ Solving Linear Equations Visually

STUDY PLAN

Read: Read Section 3.4 on pages 172-180 in your textbook or eText.

Practice: Do your assigned exercises in your ☐ Book ☐ MyMathLab ☐ Worksheets

Review: Keep your corrected assignments in an organized notebook and use them to review for the test.

Key Terms

Exercises 1-6: Use the vocabulary terms listed below to complete each statement.

Note that some terms or expressions may not be used.

horizontal axis
vertical axis
numerically
visually

algebraic expression
linear equation in one variable
variable equation
algebraically

1. When we solve an equation using the distributive property and the properties of equality, we are solving the equation _____.
2. For the graph of an expression $ax + b$, the _____ shows the values of the variable x .
3. When we solve an equation using a table of values, we are solving the equation _____.
4. A(n) _____ is an equation that can be written in the form $ax + b = 0$, where a and b are constants (numbers) and $a \neq 0$.
5. When we solve an equation by estimating values from its graph, we are solving the equation _____.
6. For the graph of an expression $ax + b$, the _____ shows the values of the expression $ax + b$.

Linear Equations in One Variable

Exercises 1-4: Refer to Example 1 on page 173 in your text and the Section 3.4 lecture video.

Determine if each equation is linear. If so, give values for a and b.

1. $6x - 4 = 0$ 1. _____

2. $5x + 6 = 3$ 2. _____

3. $\sqrt{x} - 2 = 0$ 3. _____

4. $-3x^2 + 8 = 0$ 4. _____

Solving Linear Equations Algebraically

Exercises 5-8: Refer to Examples 2-3 on pages 174-175 in your text and the Section 3.4 lecture video.

Solve each linear equation algebraically. Check your solution.

5. $4m + 2 = m - 10$ 5. _____

6. $13 - 2y - 7 = 3y - 12 + 4y$ 6. _____

7. $2(x - 5) + 3x = 15$ 7. _____

8. $4(y - 3) + 7 = 3(y + 2)$ 8. _____

Solving Linear Equations Numerically

Exercise 9-10: Refer to Example 4 on page 176 in your text and the Section 3.4 lecture video.

9. Complete the table for the given values of x . Then solve the equation $3x + 7 = 4$.

9. _____

x	-3	-2	-1	0	1
$3x + 7$					

10. Complete the table for the given values of x . Then solve the equation $-2x + 3 = -1$.

10. _____

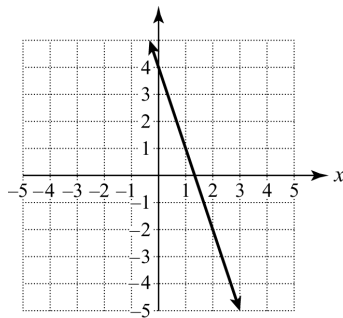
x	-1	0	1	2	3
$-2x + 3$					

Solving Linear Equations Visually

Exercises 11-12: Refer to Example 5 on page 177 in your text and the Section 3.4 lecture video.

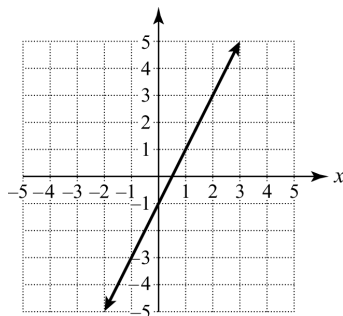
11. The graph of the expression $-3x + 4$ is shown. Use the graph to solve the equation $-3x + 4 = -2$ visually.

11. _____



12. The graph of the expression $2x - 1$ is shown. Use the graph to solve the equation $2x - 1 = -1$ visually.

12. _____



Understanding Concepts through Multiple Approaches

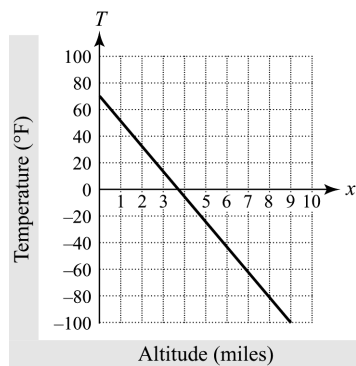
(For additional practice, visit MyMathLab.)

- 13. Altitude and Temperature** If the temperature on the ground is 70°F , then the air temperature T at an altitude of x miles is given by $T = 70 - 19x$. Find the altitude (in miles) where the air temperature is -6°F by solving the linear equation $-6 = 70 - 19x$.

- (a) Solve algebraically.
- (b) Solve numerically using the table shown.

x	2	3	4	5	6
$70 - 19x$					

- (c) Solve visually using the graph shown.



Did you get the same result using each method? Which method do you prefer? Explain why.