

Chapter 7 Systems of Equations and Inequalities

Course Number

Instructor

Date

Section 7.1 Solving Systems of Equations

Objective: In this lesson you learned how to solve systems of equations by substitution and by graphing and how to use systems of equations to model and solve real-life problems.

Important Vocabulary

Define each term or concept.

System of equations

Solution of a system of equations (in two variables)

Solving a system of equations

Method of substitution

Graphical method

Points of intersection

Break-even point

I. The Method of Substitution (Pages 554–557)

To check that the ordered pair $(-3, 4)$ is the solution of a system of equations, . . .

What you should learn

How to use the method of substitution to solve systems of equations in two variables

List the steps necessary for solving a system of equations using the method of substitution.

Explain what is meant by back-substitution.

Example 1: Solve the system of equations using the method of substitution.

$$\begin{cases} 2x + y = 2 \\ x - 2y = -9 \end{cases}$$

II. Graphical Approach to Finding Solutions (Page 558)

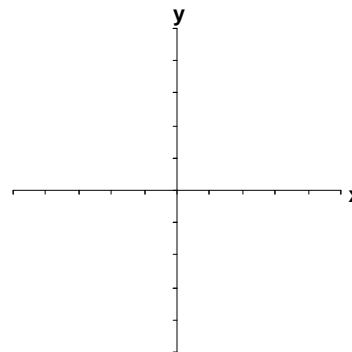
To solve a system of equations graphically, . . .

What you should learn
How to use a graphical approach to solve systems of equations in two variables

To use a graphing utility to solve a system of equations graphically, . . .

Example 2: Solve the system of equations graphically.

$$\begin{cases} x^2 - y = 5 \\ -x + y = -3 \end{cases}$$



III. Applications of Systems of Equations (Pages 559–560)

The total cost C of producing x units of a product typically has two components: _____.

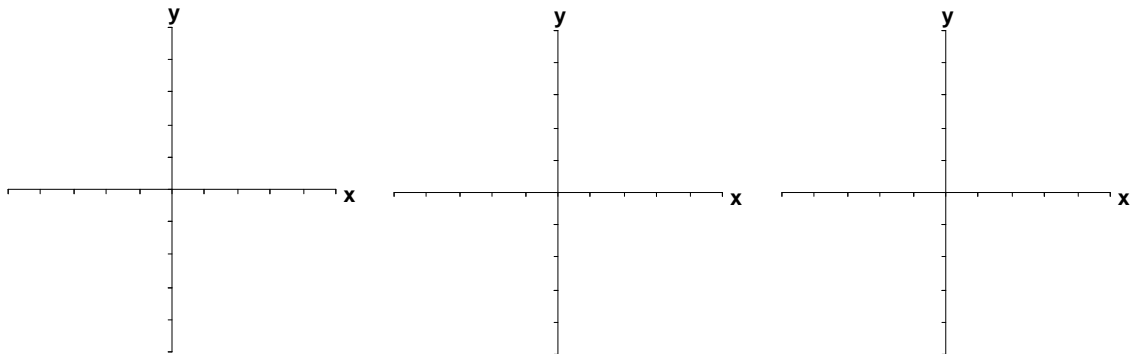
In break-even analysis, the break-even point corresponds to the _____ of the cost and revenue curves.

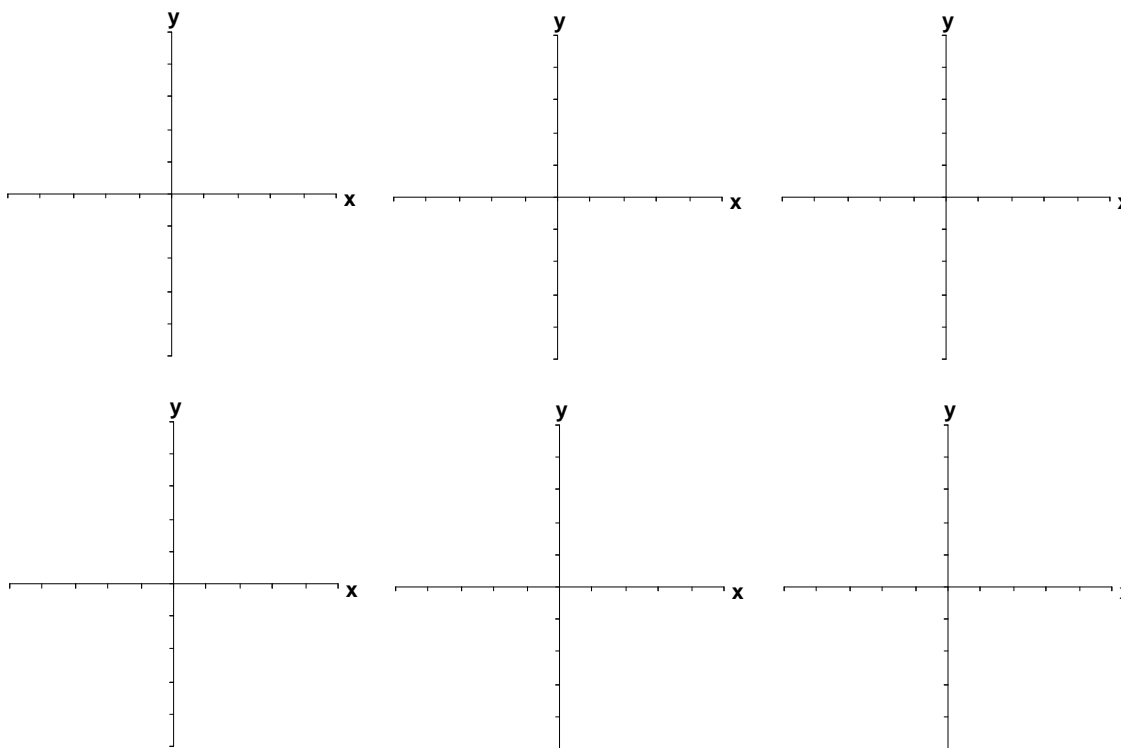
Break-even analysis can also be approached from the point of view of profit. In this case, consider the profit function, which is _____. The break-even point occurs when profit equals _____.

Example 3: The cost of producing x units is $C = 1.5x + 15,000$ and the revenue obtained by selling x units is $R = 5x$. How many items should be sold to break even?

What you should learn

How to use systems of equations to model and solve real-life problems



Additional notes**Homework Assignment**

Page(s)

Exercises