Chapter 6 Practice Test

Student Text Pages
318–319

Suggested Timing
70 min

Tools
- grid paper

Technology Tools
- graphing calculator
- TI-89 calculator

Related Resources
- G–1 Grid Paper
- G–3 Coordinate Grids
- T–7 The Computer Algebra System (CAS) on the TI-89 Calculator
- BLM 6–13 Chapter 6 Practice Test
- BLM 6–14 Chapter 6 Test
- BLM 6–15 Chapter 6 Practice Test Achievement Check Rubric

Accommodations

Gifted and Enrichment—Challenge students to create extra Review questions and extra Practice Test questions for their classmates.

Motor—Let students work with an educational assistant who will scribe their solutions for the Review questions and Practice Test questions.

Language—Provide students with opportunities to give oral responses to the Review questions and Practice Test questions.

ESL—Allow students to do fewer questions.

Study Guide

Use the following study guide to direct students who have difficulty with specific questions to the appropriate examples for review.

Question	Section(s)	Refer to
1	6.1	Example 1 (pages 265–266)
2	6.2	Example 1 (pages 275–276)
3	6.3	Investigate A (page 282)
4	6.3	Example 1 (page 284–286)
5	6.4	Example 1 (pages 294–295)
6	6.2/6.4	Example 1 (pages 275–276)/Example 3 (page 297)
7	6.1	Example 1 (pages 265–266)
8	6.1	Example 3 (page 268)
9	6.4	Example 3 (page 297)
10	6.2	Investigate (page 274)
11	6.2	Example 2 (page 276)
12	6.1	Example 4 (page 269)
13	6.2	Example 3 (pages 277–278)
14	6.4	Example 4 (pages 298–299)
15	6.3	Example 3 (page 287)
16	6.4	Example 4 (pages 298–299)
17	6.5	Example 4 (pages 308–309)
18	6.5	Example 2 (page 307)
19	6.2/6.3/6.4	Example 1 (pages 275–276), Example 3 (pages 277–278)/ Example 1 (pages 284–286)/Investigate A (pages 292–293), Example 3 (page 297)

Using the Practice Test

This Practice Test can be assigned as an in-class or take-home assignment. If it is used as an assessment, use the following guidelines to help you evaluate the students.

Can students do each of the following?
- Complete the square
- Find the maximum or minimum point of a parabola in the form $y = a(x - h)^2 + k$
- Find the maximum or minimum point of a parabola in the form $y = ax^2 + bx + c$
- Solve a quadratic equation by factoring
- Solve a quadratic equation using the quadratic formula
- Leave a solution to a quadratic equation in exact form
- Find the x-intercepts of a parabola using an algebraic method
- Use technology to solve quadratic equations and to find the x-intercepts of a parabola
- Rearrange a quadratic equation in order to solve it
- Find the vertex of a parabola, given its x-intercepts
- Find the vertex of a parabola, given its equation in the form $y = ax^2 + bx + c$
- Set up quadratic relations or equations, given sufficient information

- Solve applications of quadratics where the relation is provided
- Solve problems requiring the setting up of a quadratic relation or equation and solving it using the tools of this chapter

Summative Assessment

- After students complete **BLM 6–13 Chapter 6 Practice Test**, use **BLM 6–14 Chapter 6 Test** as a summative assessment.

Achievement Check Sample Solution, question 19, page 319

Provide students with **BLM 6–15 Chapter 6 Practice Test Achievement Check Rubric** to help them understand what is expected.

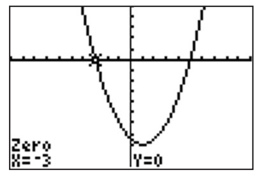
19. a) Factoring

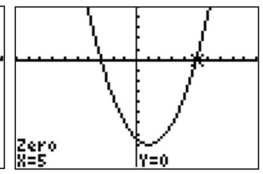
$x^2 - 2x - 15 = 0$

$(x + 3)(x - 5) = 0$

So, $x = -3$ or $x = 5$.

Graphing





Since the x-intercepts of $y = x^2 - 2x - 15$ are –3 and +5, these are the solutions to the corresponding quadratic equation.

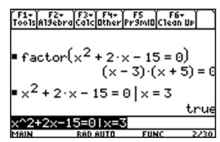
Using the Minimum operation on the graphing calculator, the vertex is (1, –16). So, the minimum value of the relation is –16.

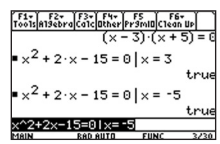
b) Completing the square

$$x^2 + 2x - 15 = 0$$
$$(x^2 + 2x + 1^2 - 1^2) - 15 = 0$$
$$(x^2 + 2x + 1^2) - 1^2 - 15 = 0$$
$$(x + 1)^2 - 16 = 0$$
$$(x + 1)^2 = 16$$
$$(x + 1) = \pm 4$$

So, $x = 3$ or $x = -5$.

CAS





c) If $9x^2 + bx + 25 = 0$ has one solution, then the trinomial must be a perfect square.

Since $9x^2 = (3x)^2$ and $25 = 5^2$, then the first and last terms are perfect squares.

Then, bx must equal $2(3x)(5)$, or $30x$. Therefore, $b = 30$.

$9x^2 + 30x + 25 = (3x + 5)^2$

So, $3x + 5 = 0$, or $x = -\frac{5}{3}$.

Alternatively, from the quadratic formula there will be one solution if $b^2 - 4ac = 0$.

For $9x^2 + bx + 25 = 0$, $a = 9$ and $c = 25$.

$$b^2 - 4(9)(25) = 0$$
$$b^2 = 900$$
$$b = 30$$

Since the one solution is also the vertex, $x = -\frac{b}{2a}$. Therefore, $x = -\frac{5}{3}$.

d) For the equation $x^2 + bx + 10 = 0$ to have no real roots, examine the quadratic formula, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Here x will not be real if $b^2 - 4ac$ is negative.

In this case $a = 1$ and $c = 10$. This means that b^2 must be less than 40.

So, b must be between $\pm\sqrt{40}$. This gives $-\sqrt{40} < b < \sqrt{40}$, or approximately $-6.32 < b < 6.32$.