Lesson 2.3: Quadratic Functions Expressed in Standard Form

Explore Your Understanding Assignment

This assignment includes multiple choice and short answer questions. For multiple choice questions, select the best answer. Each is worth 1 mark. Marks assigned to short answer questions are indicated for each question. Be sure to show all necessary work.

(1) _____ 1. The factored form and zeros of the function $f(x) = 2x^2 - 3x - 9$ are

A. $f(x) = (2x + 3)(x - 3)$, zeros are $\frac{3}{2}, -3$

B. $f(x) = (2x + 3)(x - 3)$, zeros are $-\frac{3}{2}, 3$

C. $f(x) = (2x - 3)(x + 3)$, zeros are $\frac{3}{2}, -3$

D. $f(x) = (2x - 3)(x + 3)$, zeros are $-\frac{3}{2}, 3$

(1) _____ 2. Convert $y = -x^2 - 8x - 29$ to vertex form by completing the square.

A. $y = -(x + 4)^2 - 13$

B. $y = -(x + 4)^2 - 45$

C. $y = -(x - 4)^2 - 13$

D. $y = -(x - 4)^2 - 45$

(1) _____ 3. The correct y-intercept, with proper reasoning, for the graph of the function $f(x) = -2x^2 + 12x - 10$ is

A. 10 because $c = 10$

B. 5 because $\frac{c}{-2} = 5$

C. –5 because $\frac{c}{2} = -5$

D. –10 because $c = -10$

(1) _____ 4. A quadratic function has zeros at $-\frac{3}{2}$ and 6. The graph of the function passes through the point (1, –12.5). What is the equation of the function, in standard form?

A. $f(x) = x^2 + \frac{9}{2}x + 9$

B. $f(x) = x^2 - \frac{9}{2}x - 9$

C. $f(x) = 2x^2 + 9x + 18$

D. $f(x) = 2x^2 - 9x - 18$

5. Larry likes skeet shooting, where a clay disc is shot into the air, and the participant tries to shoot it as it flies through the air. The discs are released from a firing mechanism that sits at ground level and shoots the disc on average a horizontal distance of 120 m on a parabolic path. On average, the skeet hits a height of 37.5 m after travelling a horizontal distance of 45 m.

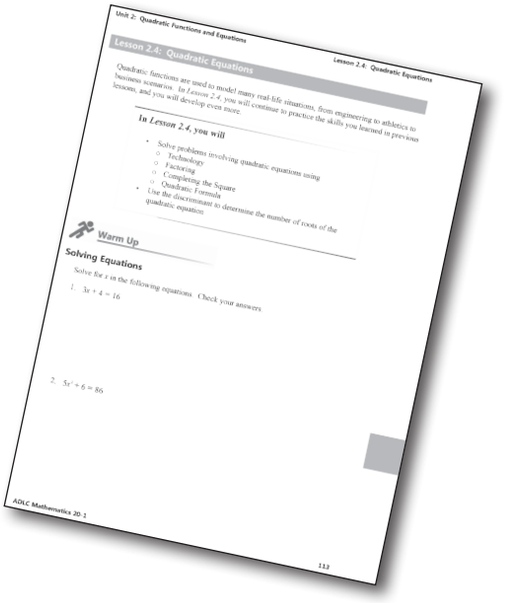
(1) a. Sketch and label a diagram that represents the given information.

(2) b. Determine the equation of a function, in standard form, that represents the flight of the clay disc. Leave values as fractions.

(3) c. Determine the average maximum height of the skeet by completing the square.

/10

You have completed *Lesson 2.3 Explore Your Understanding Assignment*. Please return to the *Module* and continue your exploration with *Lesson 2.4*.


Unit 2: Quadratic Functions and Equations

Lesson 2.4: Quadratic Equations

Lesson 2.4: Quadratic Equations

Quadratic functions are used to model many real-life situations, from engineering to athletics to business scenarios. In *Lesson 2.4*, you will continue to practice the skills you learned in previous lessons, and you will develop even more.

In *Lesson 2.4*, you will

- Solve problems involving quadratic equations using
  - Technology
  - Factoring
  - Completing the Square
  - Quadratic Formula
- Use the discriminant to determine the number of roots of the quadratic equation

Warm Up

Solving Equations

Solve for x in the following equations. Check your answers.

1. $3x + 4 = 16$

2. $5x^2 + 6 = 86$

ADLC Mathematics 20-1

113