## Mini-Task 1 Unit 7 Quadratic Functions Winter 2020 Name:

**Multiple Choice**
*Identify the choice that best completes the statement or answers the question.*

____ 1. Solve $2x^2 + 4x + 2 = 0$ by **graphing** the corresponding function and determining the zeros. (Graph in Ti-84---look for x-intercepts)

a. $x = 1, x = 1$
b. $x = –1, x = –1$
c. $x = 0, x = –1$
d. $x = 1, x = –1$

____ 2. Solve $2x^2 – 12x – 14 = 0$ by graphing the corresponding function and determining the zeros.

a. $x = 7, x = –1$
b. $x = 14, x = –2$
c. $x = 1, x = –7$
d. $x = 2, x = –14$

____ 3. Rewrite $x^2 + x = –x + 3$ in standard form. Then solve the equation in standard form by graphing.

a. $x = –3, x = 1$
b. $x = 3, x = 1$
c. $x = –3, x = –3$
d. $x = 3, x = –1$

____ 4. Solve $x^2 + 5x + 4 = 0$ by factoring. (Follow the hierarchy: GCF, DOS, TRI= decomp or no decomp)

a. $x = –4, x = –1$
b. $x = –5, x = –1$
c. $x = 5, x = 1$
d. $x = 4, x = 1$

____ 5. Solve $6x^2 + 13x – 5 = 0$ by factoring. (decomposition)

a. $x = -\frac{5}{2}, x = \frac{1}{3}$
b. $x = 2, x = –3$
c. $x = \frac{5}{2}, x = -\frac{1}{4}$
d. $x = –2, x = 3$

____ 6. Solve $2x^2 + 11x + 12 = 0$ by factoring. (decomposition)

a. $x = \frac{3}{2}, x = 4$
b. $x = -4, x = -3$
c. $x = -\frac{3}{2}, x = -4$
d. $x = 4, x = 3$

____ 7. Solve $25x^2 - 36 = 0$ by factoring. (DOS)

a. $x = -6, x = 5$
b. $x = \frac{6}{5}, x = -\frac{6}{5}$
c. $x = \frac{5}{6}, x = -\frac{5}{6}$
d. $x = 6, x = -6$

For $ax^2 + bx + c = 0$,
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

____ 8. Solve $2y^2 - 3y + 1 = 0$ using the quadratic formula.

a. $y = 1, y = -\frac{1}{2}$
b. $y = 1, y = -\frac{1}{2}$
c. $y = 1, y = \frac{1}{2}$
d. $y = -1, y = \frac{1}{2}$

____ 9. Solve $x^2 - 2x = 4$ using the quadratic formula.

a. $x = 1 + \sqrt{20}, x = 1 - \sqrt{20}$
b. $x = -1 + \sqrt{20}, x = -1 - \sqrt{20}$
c. $x = -1 + \sqrt{5}, x = -1 - \sqrt{5}$
d. $x = 1 + \sqrt{5}, x = 1 - \sqrt{5}$

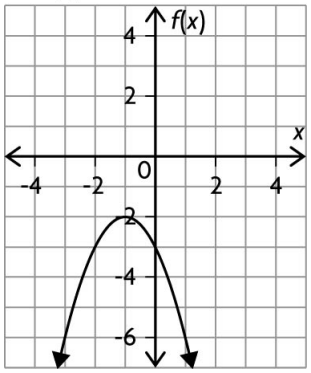
____ 10. Solve $2x^2 + 4x = -5 - 2x^2$ using the quadratic formula.

a. $x = -1 + \sqrt{6}, x = -1 - \sqrt{6}$
b. $x = \frac{1 + \sqrt{6}}{4}, x = \frac{1 - \sqrt{6}}{4}$
c. $x = -\frac{1 + \sqrt{6}}{4}, x = -\frac{1 - \sqrt{6}}{4}$
d. $x = 1 + \sqrt{6}, x = 1 - \sqrt{6}$

**Short Answer**

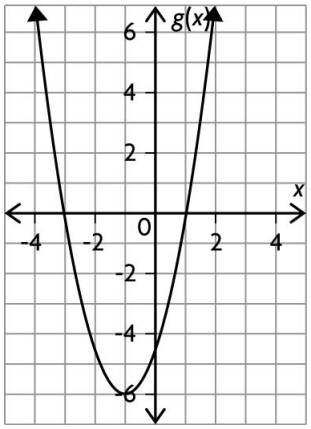
11. Determine the roots of the corresponding quadratic equation for the graph.

$f(x) = -x^2 - 2x - 3$




12. Determine the roots of the corresponding quadratic equation for the graph.

$g(x) = x^2 + 2x - 3$




13. The graph of a quadratic function has $x$-intercepts –10 and 2. Write a quadratic equation that has these roots in factored and standard form.

14. Solve $2x^2 - 5x - 3 = 0$ using the quadratic formula. Verify by graphing.

For $ax^2 + bx + c = 0$,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

15. Solve $-2x^2 + 3x - 2 = -8x^2 - 2x + 2$ using the quadratic formula.

For $ax^2 + bx + c = 0$,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

16. Solve $x^2 - 2x - 1 = 0$. State the solution as exact values in fully simplified form.

End

**lll**

## Answer Section

### MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: Grade 11 REF: Lesson 7.1
   OBJ: 1.5 Sketch the graph of a quadratic function. | 2.1 Determine, with or without technology, the intercepts of the graph of a quadratic function.
   TOP: Solving quadratic equations by graphing KEY: quadratic equation | roots
2. ANS: A PTS: 1 DIF: Grade 11 REF: Lesson 7.1
   OBJ: 1.5 Sketch the graph of a quadratic function. | 2.1 Determine, with or without technology, the intercepts of the graph of a quadratic function.
   TOP: Solving quadratic equations by graphing KEY: quadratic equation | roots
3. ANS: A PTS: 1 DIF: Grade 11 REF: Lesson 7.1
   OBJ: 1.5 Sketch the graph of a quadratic function. | 2.1 Determine, with or without technology, the intercepts of the graph of a quadratic function.
   TOP: Solving quadratic equations by graphing KEY: quadratic equation | roots
4. ANS: D PTS: 1 DIF: Grade 11 REF: Lesson 7.2
   OBJ: 2.2 Determine, by factoring, the roots of a quadratic equation, and verify by substitution.
   TOP: Solving quadratic equations by factoring KEY: quadratic equation | roots
5. ANS: A PTS: 1 DIF: Grade 11 REF: Lesson 7.2
   OBJ: 2.2 Determine, by factoring, the roots of a quadratic equation, and verify by substitution.
   TOP: Solving quadratic equations by factoring KEY: quadratic equation | roots
6. ANS: C PTS: 1 DIF: Grade 11 REF: Lesson 7.2
   OBJ: 2.2 Determine, by factoring, the roots of a quadratic equation, and verify by substitution.
   TOP: Solving quadratic equations by factoring KEY: quadratic equation | roots
7. ANS: B PTS: 1 DIF: Grade 11 REF: Lesson 7.2
   OBJ: 2.2 Determine, by factoring, the roots of a quadratic equation, and verify by substitution.
   TOP: Solving quadratic equations by factoring KEY: quadratic equation | roots
8. ANS: C PTS: 1 DIF: Grade 11 REF: Lesson 7.3
   OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
   TOP: Solving quadratic equations using the quadratic formula
   KEY: quadratic equation | roots | quadratic formula
9. ANS: D PTS: 1 DIF: Grade 11 REF: Lesson 7.3
   OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
   TOP: Solving quadratic equations using the quadratic formula
   KEY: quadratic equation | roots | quadratic formula
10. ANS: C PTS: 1 DIF: Grade 11 REF: Lesson 7.3
    OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
    TOP: Solving quadratic equations using the quadratic formula
    KEY: quadratic equation | roots | quadratic formula

### SHORT ANSWER

11. ANS:
    There are no roots.

PTS: 1 DIF: Grade 11 REF: Lesson 7.1
OBJ: 2.1 Determine, with or without technology, the intercepts of the graph of a quadratic function. | 2.4 Explain the relationships among the roots of an equation, the zeros of the corresponding function, and the x-intercepts of the graph of the function. | 2.5 Explain, using examples, why the graph of a quadratic function may have zero, one or two x-intercepts. TOP: Solving quadratic equations by graphing
KEY: quadratic equation | roots

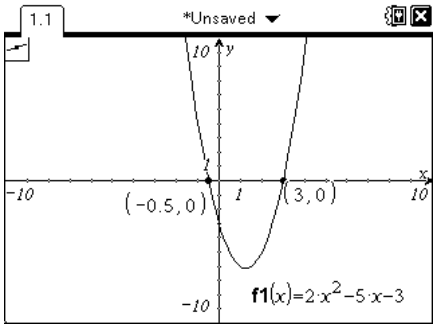
12. ANS:
$x = 1, x = -3$

PTS: 1 DIF: Grade 11 REF: Lesson 7.1
OBJ: 2.1 Determine, with or without technology, the intercepts of the graph of a quadratic function. | 2.4 Explain the relationships among the roots of an equation, the zeros of the corresponding function, and the x-intercepts of the graph of the function. | 2.5 Explain, using examples, why the graph of a quadratic function may have zero, one or two x-intercepts. TOP: Solving quadratic equations by graphing
KEY: quadratic equation | roots

13. ANS:
Answers may vary.
$x^2 + 8x - 20 = 0$

PTS: 1 DIF: Grade 11 REF: Lesson 7.2
OBJ: 2.2 Determine, by factoring, the roots of a quadratic equation, and verify by substitution. | 2.6 Express a quadratic equation in factored form, given the zeros of the corresponding quadratic function or the x-intercepts of the graph of the function. TOP: Solving quadratic equations by factoring
KEY: quadratic equation | roots

14. ANS:
$x = -\frac{1}{2}, x = 3$




PTS: 1 DIF: Grade 11 REF: Lesson 7.3
OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
TOP: Solving quadratic equations using the quadratic formula
KEY: quadratic equation | roots | quadratic formula

15. ANS:
$x = \frac{1}{2}, x = -\frac{4}{3}$

PTS: 1 DIF: Grade 11 REF: Lesson 7.3
OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
TOP: Solving quadratic equations using the quadratic formula
KEY: quadratic equation | roots | quadratic formula

16. ANS:
$x = 1 + \sqrt{2}, x = 1 - \sqrt{2}$

PTS: 1 DIF: Grade 11 REF: Lesson 7.3
OBJ: 2.3 Determine, using the quadratic formula, the roots of a quadratic equation.
TOP: Solving quadratic equations using the quadratic formula
KEY: quadratic equation | roots | quadratic formula