

## Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) Understand and apply the quadratic formula.

Warm-up: Write in standard form.

a)  $y = (x - 3)^2 - 6$

b)  $y = (x + 2)^2 + 1$

### MCF 3MI 4.3 Solving Quadratic Equations Using the Quadratic Formula

Date: \_\_\_\_\_

The quadratic formula is derived by completing the square and solving for  $x$ .  
(Refer to pp. 218-219 for 1 method.)

**All** quadratic equations of the form  $ax^2 + bx + c = 0$  can be solved using the quadratic formula.

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

The formula (above) allows you to find the roots (zeros) without factoring, and for unfactorable quadratic expressions.

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

Ex.1: Identify the values of a, b, and c for the following:

a)  $4x^2 - 7x + 2 = 0$

b)  $(x+1)(2x-3) = 3(x+2)$



Ex.2: Use the quadratic formula to solve each equation.

a)  $x^2 - 6x + 3 = 0$

b)  $x^2 + 4x = -5$

c)  $4x^2 - 9x + 5 = 0$

Ex.3: See p.220, Example 4.

**EXAMPLE 4** | Applying the quadratic formula to solve a problem

The profit on a school drama production is modelled by the quadratic equation  $P(x) = -60x^2 + 790x - 1000$ , where  $P(x)$  is the profit in dollars and  $x$  is the price of the ticket, also in dollars.

- a) Use the quadratic formula to determine the break-even price for the tickets.
- b) At what price should the drama department set the tickets to maximize their profit?

**Today's Homework: pp. 222-223 # 1bcd, 3, 6, 8**