

## Quadratic Equations

- (1) Does every quadratic equation have 2 solutions? Explain your answers
- (2) Is it possible for a quadratic equation to have 3 solutions? Explain your answer.
- (3) Consider the following quadratic equation function

$$f(x) = x^2 - 3x - 10$$

- (a) Plot the graph of the function  $f(x)$
- (b) Solve the equation

$$x^2 - 3x - 10 = 0$$

- (c) Find the x-intercepts for the graph of the function  $f$ . What can you conclude?
- (4) Using the quadratic formula, solve the following equations

(a)

$$3x^2 - 2x - 1 = 0$$

(b)

$$\frac{1}{2}x^2 - \frac{2}{3}x - 2 = 0$$

(c)

$$x^2 - 7ix - 10 = 0$$

(d)

$$x^2 - 2\sqrt{3}x + 3 = 0$$

(e)

$$3 + \frac{5}{x-4} = \frac{7}{x+4}$$

- (5) Show that if  $r_1$  and  $r_2$  are the solutions of the quadratic  $ax^2 + bx + c = 0$  then  $r_1r_2 = c/a$  and  $r_1 + r_2 = -b/a$ .
- (6) Find two consecutive positive even integers whose product is 168
- (7) A speedboat takes one hour longer to go 24 miles up a river than to return. If the boat cruises at 10 miles per hour in still water, what is the rate of the current?