

On-Line Lecture Notes

OLL 1.2.4

For any quadratic equation of the form

$$ax^2 + bx + c = 0, \text{ the}$$

solution is:

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

(This formula can be derived by solving $ax^2 + bx + c = 0$ by completing the square.)

EXAMPLE: $2x^2 + 9x - 5 = 0$

$$a = 2, \quad b = 9, \quad c = -5$$

$$x = \frac{-9 \pm \sqrt{81 - 4(2)(-5)}}{4}$$

$$x = \frac{-9 \pm \sqrt{81 + 40}}{4}$$

$$x = \frac{-9 \pm \sqrt{121}}{4} = \frac{-9 \pm 11}{4}$$

$$x = 1/2 \text{ or } x = -5$$

Sample Problem from MML Test Objective Assignment

#11 From MML Test obs; #1

Find real solutions, if any, using the quadratic formula

$$3x^2 - 8x + 5 = 0$$

$$a = 3, \quad b = -8, \quad c = 5$$

$$x = \frac{8 \pm \sqrt{64 - 4(3)(5)}}{6}$$

$$x = \frac{8 \pm \sqrt{64 - 60}}{6}$$

$$x = \frac{8 \pm \sqrt{4}}{6}$$

$$x = \frac{8 \pm 2}{6}$$

$$x = \frac{8+2}{6} = \frac{10}{6} = \frac{5}{3}$$

$$x = \frac{8-2}{6} = \frac{6}{6} = 1$$

$$\text{so } x = 5/3 \text{ or } x = 1$$