Section P. 4 Part I Solving Equations Algebraically

Objective: Given a quadratic equation, students will find its solution(s) and check the solution(s).

Study Problems : Pg 52 #81, 83, 97, 101,103, 115, 119, 123

Example
Solve by complete the square.

A) $2x^2-8x+9=0$

$2(x^2-4x+\underline{4}) = -9+2(\overset{8}{4})$

$2(x-2)^2 = -1$

$(x-2)^2 = \frac{-1}{2}$

$x-2 = \pm i\sqrt{\frac{1}{2}}$

$x = 2 \pm \frac{i\sqrt{2}}{2}$

b) $3x^2-12x+8=0$ 12

$3(x^2-4x+\underline{4}) = -8+3(4)$

$3(x-2)^2 = 4$

$\sqrt{(x-2)^2} = \sqrt{\frac{4}{3}}$

$x-2 = \pm \frac{2\sqrt{3}}{3}$

$x = 2 \pm \frac{2\sqrt{3}}{3}$

Solve by using the quadratic Formula

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

$x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(3)(8)}}{2(3)}$

$x = \frac{2 \pm \sqrt{4 - 96}}{6}$

$x = \frac{2 \pm \sqrt{-92}}{6}$

$x = \frac{2 \pm i\sqrt{92}}{6}$ → $x = \frac{2 \pm 2i\sqrt{23}}{6}$

$x = \frac{1 \pm i\sqrt{23}}{3}$

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

$\sqrt{92}$

$\sqrt{4} \cdot \sqrt{23}$

Quadratic Form

Standard Form

$y = ax^2 + bx + c$

Complete □'s

Vertex Form

$y = a(x-h)^2 + k$

Intercept Form

$y = a(x-p)(x-q)$

Factor