

The Quadratic Formula

Note Title

3/23/2009

Objective: To solve quadratic equations using the quadratic formula & 2) using the

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

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

$D > 0$ two real roots

$D =$ perfect square ...

$D =$ not ...

irrational

$D < 0$ two conjugate

Describe Solve.

$$\text{Ex 1: } 1x^2 - 8x + 33 = 0$$

$$\textcircled{3} X = \frac{-b \pm \sqrt{\quad}}{2a}$$

$$\textcircled{1} D = b^2 - 4ac$$
$$= (-8)^2 + (1)(33)$$
$$= 64 + 33$$

$$X = \frac{+(-8) \pm \sqrt{197}}{2(1)}$$

$$X = \frac{8 \pm 14}{2}$$

two real, rational roots

$$X = \frac{22}{2} = 11$$
$$X = \frac{-6}{2} = -3$$

Ex 2: $1x^2 - 6x + 2 = 0$

① $D = b^2 - 4ac$
 $= (-6)^2 - 4(1)(2)$
 $= 36 - 8$
 $= 28$

② + two real, irrational roots

③ $X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
 $X = \frac{+6 \pm \sqrt{28}}{2}$

$X = \frac{6 \pm \sqrt{7}}{2}$
 $X = \frac{6 \pm \sqrt{7}}{2}$
 $X = 3 \pm \sqrt{7}$

Ex 3: $x^2 + 13 = 6x$

$$x^2 - 6x + 13 = 0$$

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

① $D = b^2 - 4ac$

$$= (-6)^2 - 4(1)(13)$$

$$= 36 - 52$$

$$= -16$$

$$x = \frac{+(-6) \pm \sqrt{-16}}{2(1)}$$

$$x = \frac{6 \pm 4i}{2}$$

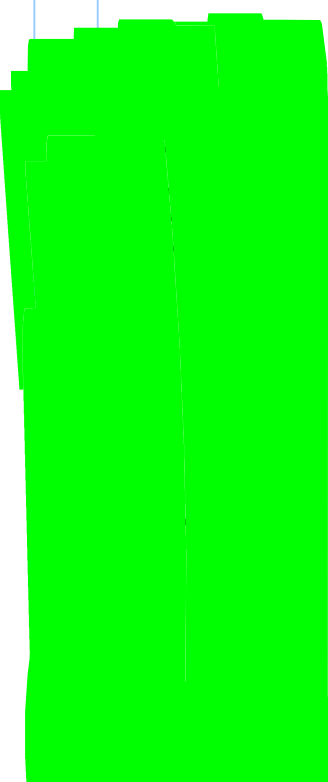
$2 \cdot 1$

$$x = 3 \pm 2i$$

② two conjugate imaginary roots

$$\sqrt{0} = 0$$

P 317 (6, 7, 9, 11)



$$\textcircled{6} 4x^2 + 4x + 1 = 0$$

$$\textcircled{7} x^2 + 3x + 8 = 5$$

$$\textcircled{9} x^2 + 5x + 6 = 0$$

$$\textcircled{11} 4x^2 + 20x + 25 = -2$$