10 - 4
Using the Quadratic Formula

Quadratic Formula

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

Ex: $1x^2 - 2x - 24 = 0$ (a = 1, b = −2, c = −24)

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

$$\frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(-24)}}{2(1)}$$

$$\frac{2 \pm \sqrt{4 + 96}}{2}$$

$$\frac{2 \pm 10}{2}$$

$6 \quad -4$

Ex: $24x^2 - 14x = 6$

$-6 \quad -6$

$$24x^2 - 14x - 6 = 0$$

$$\frac{-(-14) \pm \sqrt{(-14)^2 - 4(24)(-6)}}{2(24)}$$

$$\frac{14 \pm \sqrt{196 + 576}}{48} \qquad 14 + \sqrt{772} \,//\, 48$$

$$\frac{14 \pm \sqrt{772}}{48}$$

.87 and −0.29

discriminant: $b^2 - 4ac$

positive → 2 roots

zero → 1 root $\quad \frac{2 \pm \sqrt{0}}{2}$

negative → no real roots

Find the discriminant. Then determine the number of roots.

Ex: $2x^2 + 10x + 11 = 0$

$10^2 - 4(2)(11)$

$100 - 88 = 12$

2

Ex: $4x^2 - 10x + 25 = 0$

$(-10)^2 - 4(4)(25)$

$100 - 400 = -300$

none

Ex: $3x^2 + 4x = -2$

$+2 \quad +2$

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

$16 - 24 = -8$

none

Homework:

p.550 #14 - 19, 38 - 40