

10 - 4

Using the Quadratic Formula

Quadratic Formula

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

Ex: $\textcolor{red}{1}x^2 - \textcolor{blue}{2}x - \textcolor{green}{24} = 0$

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

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

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

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

$$6 \quad -4$$

$$\text{Ex: } 24x^2 - 14x = 6$$

$$-6 \quad +6$$

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

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

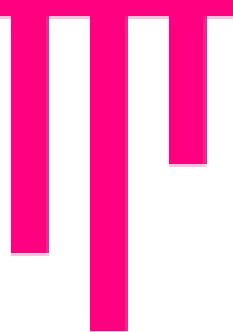
$$\frac{14 \pm \sqrt{196 + 576}}{48}$$

$$14 + \sqrt{772} / 48$$

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

.87 and -0.29

discriminant: $b^2 - 4ac$



positive \rightarrow 2 roots

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

negative \rightarrow no real roots

Find the discriminant. Then determine the number of roots.

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

$$\begin{aligned}10^2 - 4(2)(11) \\ 100 - 88 = 12\end{aligned}$$

2

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

$$\begin{aligned}(-10)^2 - 4(4)(25) \\ 100 - 400 = -300\end{aligned}$$

none

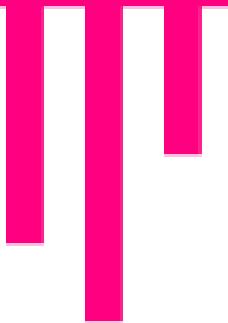
Ex: $3x^2 + 4x = -2$

+2 ≠ 2

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

$$16 - 24 = -8$$

none



Homework:

p.550 #14 - 19, 38 - 40