

10-4: Solving Quadratic Equations by using the Quadratic Formula

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

where $a \neq 0$

Quadratic Formula

1.) $x^2 - 2x - 24 = 0$ $ax^2 + bx + c$

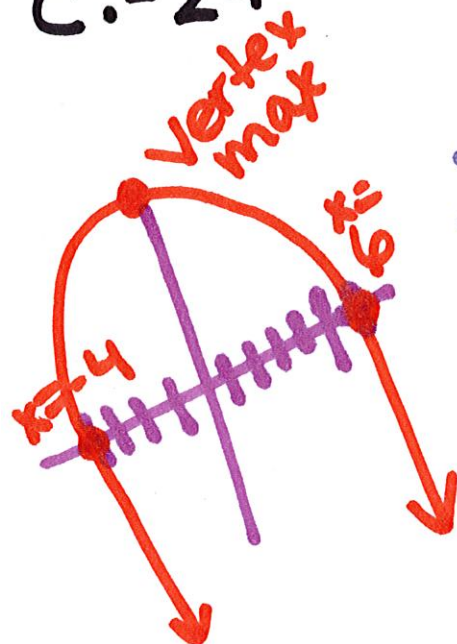
a: 1
b: -2
c: -24

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

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

$$x = \frac{2 \pm \sqrt{100}}{2} \quad x = \frac{2 \pm 10}{2}$$

TWO ROOT $x = \frac{2+10}{2} = 6$ $x = \frac{2-10}{2} = -4$



$$2.) v^2 + 12v + 20 = 0$$

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

$$③ \quad 4x^2 - 40x + 100 = 0$$

a: 4
b: -40
c: 100

$$x = \frac{-(-40) \pm \sqrt{(-40)^2 - 4(4)(100)}}{2(4)}$$

$$x = \frac{40 \pm \sqrt{1600 - 1600}}{8}$$

$$x = \frac{40 \pm \sqrt{0}}{8}$$

~~$x = 40$~~

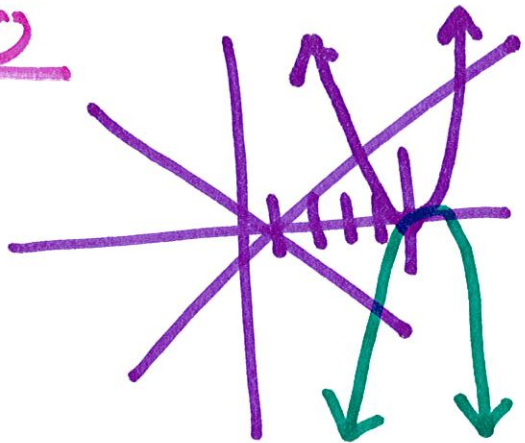
$$x = \frac{40 \pm 0}{8}$$

$$x = \frac{40 + 0}{8}$$

$$x = 5$$

$$x = \frac{40 - 0}{8}$$

$$x = 5$$



Double Root

Discriminant: $b^2 - 4ac$

negative
no real
roots

positive
two
roots

zero
double
root

④ Find the discriminant
of $2x^2 + 10x + 11$

a: 2

b: 10

c: 11

$$b^2 - 4ac$$

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

$$100 - 88$$

$$12$$

two
roots

HW: pg. 550: 4-12 evens ♥