Key

Discriminant

5/6/20

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

Discriminant = b^2-4ac

if bigger than 0 → 2 real solutions
if less than 0 → no real solutions
if 0 → 1 real solution

1) $x^2+4x-7=0$

$a=1 \quad b=4 \quad c=-7$

$D = b^2-4ac$

$D = (4)^2-4(1)(-7)$

$D = 44$ → positive so 2 real solutions

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a} \rightarrow \frac{-4 \pm \sqrt{44}}{2(1)} \rightarrow \frac{-4 \pm \sqrt{4}\sqrt{11}}{2} \rightarrow \frac{-4 \pm 2\sqrt{11}}{2}$

$\frac{-4 \pm 2\sqrt{11}}{2} \rightarrow \frac{-4}{2} \pm \frac{2\sqrt{11}}{2}$ $x = -5.32$ & 1.32

two real solutions ✓

2) $x^2-6x+9=0$

$D = (-6)^2-4(1)(9)$

$D = 0$ - 1 real solution

$x = \frac{6 \pm \sqrt{(-6)^2-4(1)(9)}}{2(1)} \rightarrow \frac{6 \pm \sqrt{0}}{2} \rightarrow \frac{6}{2} \rightarrow \boxed{3}$

one real solution

3) $2x^2+5x+8=0$

$D = (5)^2 - 4(2)(8)$

$D = -39 \rightarrow$ 2 imaginary or no real solutions

$x = \frac{-5 \pm \sqrt{-39}}{2(2)} \rightarrow \frac{-5 \pm \sqrt{-39}}{4} \rightarrow$ not factorable

ignore info about imaginary #'s. We do not cover imaginary in Alg 1