

ALGEBRA 2

Topic 4 // Solving Quadratics

N:

D:

P: 1 2 3 4 5 6

O: to solve various types of quadratics, using factoring or quadratic formula

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

① $6x^2 - 7x - 3 = 0$

$(3x+1)(2x-3) = 0$

$3x+1=0$ $2x-3=0$
 \downarrow \downarrow
 -1 $+3$ $+3$

$3x = -1$ $2x = 3$
 $\div 3$ $\div 2$

$x = -\frac{1}{3}$ $x = \frac{3}{2}$

② $2x^2 + 10x - 4 = 0$

$a=2$ $b=10$ $c=-4$

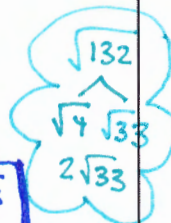
$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(10) \pm \sqrt{(10)^2 - 4(2)(-4)}}{2(2)}$

$= \frac{-10 \pm \sqrt{100 + 32}}{4} = \frac{-10 \pm \sqrt{132}}{4}$

$= \frac{-10 \pm 2\sqrt{33}}{4} = \frac{-10}{4} \pm \frac{2\sqrt{33}}{4}$

$= -\frac{5}{2} \pm \frac{\sqrt{33}}{2}$

$x = -\frac{5}{2} + \frac{\sqrt{33}}{2}$ $x = -\frac{5}{2} - \frac{\sqrt{33}}{2}$



► If can, use X-factor, If not, then use Quadratic Formula.

• You can always use Quadratic Formula

Quadratics w/o "b": $ax^2 + c = 0$

① $4x^2 - 16 = 0$
 $\div 4$ $\div 4$

$x^2 = 4$

$x = \pm 2$

② $2x^2 - 32 = 0$
 $\div 2$ $\div 2$

$x^2 = 16$

$x = \pm 4$

③ $3x^2 - 24 = 0$
 $\div 3$ $\div 3$

$x^2 = 8$

$x = \pm 2\sqrt{2}$



Quadratics w/o "c": $ax^2 + bx = 0$

① $3x^2 + 6x = 0$ ← Factor
 $3x(x+2) = 0$

$3x = 0$
 $\div 3$

$x = 0$

$x+2 = 0$
 $\div 2$ $\div 2$

$x = -2$

② $4x^2 - 40x = 0$
 $4x(x-10) = 0$

$4x = 0$
 $\div 4$

$x = 0$

$x-10 = 0$
 $\div 10$ $\div 10$

$x = 10$

③ $8x^2 + 30x = 0$
 $2x(4x+15) = 0$

$2x = 0$
 $\div 2$

$x = 0$

$4x+15 = 0$
 $\div 15$ $\div 15$

$4x = -15$
 $\div 4$

$x = -\frac{15}{4}$