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 $6x^2 - 7x - 3 = 0$

$1 \cdot 6$, $2 \cdot 3$; $1 \cdot -3$, $-1 \cdot 3$

3, 1, 2, $\frac{-9}{2}$, -3

$6 \quad -7 \quad -3$

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

$3x+1=0 \quad -1 \quad -1$

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

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

$2x-3=0 \quad +3 \quad +3$

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

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

② $2x^2 + 10x - 4 = 0$

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

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

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

$= \frac{-10 \pm 2\sqrt{33}}{4} = \frac{-10}{4_2} \pm \frac{2\sqrt{33}}{4_2}$

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

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

$\sqrt{132}$

$\sqrt{4}\ \sqrt{33}$

$2\sqrt{33}$

- 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 $4x^2 - 16 = 0$

$+16 \quad +16$

$\frac{4x^2}{4} = \frac{16}{4}$

$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

② $2x^2 - 32 = 0$

$+32 \quad +32$

$\frac{2x^2}{2} = \frac{32}{2}$

$\sqrt{x^2} = \sqrt{16}$

$x = \pm 4$

③ $3x^2 - 24 = 0$

$+24 \quad +24$

$\frac{3x^2}{3} = \frac{24}{3}$

$\sqrt{x^2} = \sqrt{8}$

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

$\sqrt{8}$

$\sqrt{4}\ \sqrt{2}$

$2\sqrt{2}$

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

① $3x^2 + 6x = 0$ ← Factor

$3x(x+2) = 0$

$\frac{3x}{3} = \frac{0}{3}$

$x = 0$

$x+2=0 \quad -2 \quad -2$

$x = -2$

② $4x^2 - 40x = 0$

$4x(x-10) = 0$

$\frac{4x}{4} = \frac{0}{4}$

$x = 0$

$x-10=0 \quad +10 \quad +10$

$x = 10$

③ $8x^2 + 30x = 0$

$2x(4x+15) = 0$

$\frac{2x}{2} = \frac{0}{2}$

$x = 0$

$4x+15=0 \quad -15 \quad -15$

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

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