

$$1. \quad x+2 = 4x^3 + 8x^2$$

$$0 = 4x^3 + 8x^2 - x - 2 \quad (\text{GROUPING})$$

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

$$0 = (x+2)(4x^2 - 1) \quad (\text{DOTS})$$

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

$$x+2=0 \quad 2x+1=0 \quad 2x-1=0$$

$$x = -2 \quad 2x = -1 \quad 2x = 1$$

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

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

$$2. \quad 5x^4 = 40x$$

$$5x^4 - 40x = 0$$

$$5x(x^3 - 8) = 0 \quad (\text{GCF})$$

$$5x(x-2)(x^2+2x+4) = 0 \quad (\text{DIFF OF 2 CUBES})$$

$$5x = 0 \quad x-2 = 0 \quad x^2+2x+4 = 0$$

$$\frac{5x}{5} = \frac{0}{5} \quad x = 0 \quad a=1 \quad b=2 \quad c=4$$

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

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

$$= \frac{-2 \pm \sqrt{4-16}}{2}$$

$$= \frac{-2 \pm \sqrt{-12}}{2}$$

$$\frac{-2 \pm \sqrt{-1 \cdot 2 \cdot 2 \cdot 3}}{2}$$

$$\frac{-2 \pm 2i\sqrt{3}}{2}$$

$$x = \frac{-2}{2} \pm \frac{2\sqrt{3}}{2} i$$

$$x = -1 \pm \sqrt{3} i$$

RADICAL EQUATIONS

1. GET A RADICAL BY ITSELF (DON'T CREATE A FRACTION)
2. RAISE BOTH SIDES TO A POWER EQUAL TO INDEX
3. IF MORE RADICALS GO BACK TO STEP 1
4. SOLVE FOR X
5. CHECK ANSWER(S)