

ALGEBRA REVIEW

Quadratic Formula

The roots of $ax^2 + bx + c = 0$ (if $b^2 - 4ac \geq 0$) are: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Example) The roots of $x^2 + 3x - 1 = 0$ are $x = \frac{-3 \pm \sqrt{13}}{2}$

Exponents and Radicals

$$a^0 = 1 \text{ if } a \neq 0$$

$$a^{-n} = \frac{1}{a^n}$$

$$a^+ = a$$

$$a^- = \frac{1}{a}$$

$$(-a)^n = (-1)^n a^n$$

$$(a^m)^n = a^{mn}$$

$$\sqrt{a} = a^{\frac{1}{2}}$$

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

$$x^3 - 8 = (x - 2)(x^2 + 2x + 4)$$

$$x^3 + 125 = (x + 5)(x^2 - 5x + 25)$$

Algebraic Errors to Avoid

$\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$ To see this error, let $a = 1$, $b = 1$, $c = 1$

$$\sqrt{a^2 + b^2} \neq \sqrt{a^2} + \sqrt{b^2}$$

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