

Rapid fire True or false.

- 1) $3^3 = 3^{81^{1/2}}$
- 2) $\sqrt{2000} (\sqrt{20}) = 20^{4^{0.5}}$
- 3) $|\sqrt{x}| - x$ can never be positive
- 4) ${}^nC_k \leq {}^nP_k$ for all $n > k > 0$
- 5) $a^2 + b^2 < (a+b)^2$ if $a > 0$ and $b < 0$
- 6) if $\frac{3}{x} < \frac{3}{y}$ then x has to be greater than y
- 7) if $x^2 \geq 2^x$ then $2 \leq x \leq 4$ are the only possible solutions of x such that $x > 0$.
- 8) if $x^2 \geq 2^x$ then x can never have a ~~the~~ solution for $x < 0$.
- 9) if $y = x^2$ ~~then~~
and $z = x$
then $y > z$ for $-1 < x < 1$
- 10) $a^2 + b^2 + 2ab > a^2 + b^2 - 2ab$ for all values of a and b .

$$11) (a-b)^2 = (a+b)^2 - 4ab \quad \text{for all values of } a \text{ and } b.$$

$$12) a^2 - b^2 < a^2 + b^2 \quad \text{for all values of } a \text{ and } b$$

$$13) \frac{a+b}{a-b} = \frac{a}{a} \pm \frac{b}{b}$$

$$14) |x-3| + y < 0 \quad \text{has no solution if } y = z^2$$

$$15) |x^2| = |x|^2 \quad \text{for all values of } x$$

$$16) \text{ If } y - x^3 > -x^3 \quad \text{then } y \text{ can never be a negative number}$$

$$17) n - n^2 - n^3 > n - n^2 - n^3 - n^4 \quad \text{for all possible values of } n$$

$$18) 3x - (-x - 3x^2) + 7 = x(4 + 3x) + \sqrt{49}$$

$$19) \sqrt{10000} = \frac{1}{\sqrt{.0001}}$$

$$20) \frac{1}{x} - \frac{1}{x^2} - \frac{1}{x^3} = \frac{x^2 - x - 1}{x^3}$$