Expand $A = [(x+1) - y][(x+1) + y]$.
Verify that $3! + 2! < (3+2)!$ and $3! - 2! > (3-2)!$.
The fraction $5/10$ is of ratio $1 : 2$.
If $f(x) = x^2$ then show that $f'(x) = 2x$ and $f''(x) = 2$
16 is divisible by 2 so we write $2|16$.
The sum of the inner angles of a triangle is 180 degree.

If the α, β and γ are the inner angles then

$$\alpha + \beta + \gamma = \pi$$

The set of positive integer is denoted by $\mathbb{N}$.
The set of integer is denoted by $\mathbb{Z}$.
The set of rational, real and complex numbers are denoted by $\mathbb{Q}, \mathbb{R}$ and $\mathbb{C}$ respectively.

The numbers of permutation of k elements taken from distinct n elements is given by $P(n,k) = \frac{n!}{(n-k)!}$
The number of combination of k elements taken from distinct n elements is given by $C(n,k) = \frac{n!}{k!(n-k)!}$

The relation between combination and permutation is

$$C(n,k) = \frac{P(n,k)}{k!} \tag{1}$$

1. Find the formula for computing

$$S_n = 1^2 + 2^2 + 3^2 + \cdots + n^n \tag{2}$$
$$S_n = \frac{n(n+1)}{2} \tag{3}$$

2. The formula is derived from the equality $(n+1)^3 - n^3 = 3n^2 + 3n + 1$

$$S_n = 1^2 + 2^2 + 3^2 + \cdots + n^2 \tag{4}$$
$$S_n = \frac{n(n+1)(2n+1)}{6} \tag{5}$$

3. To solve quadratic equation $ax^2 + bx + c = 0$ where $a \neq 0$ we calculate the discriminant

$$\Delta = b^2 - 4ac$$

$$\text{or } \Delta = b^2 - 4ac$$

- Roots of the equation is given by the formula

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} \tag{6}$$

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} \tag{7}$$

or precisely,

$$x = \frac{-b \pm \sqrt{\Delta}}{2a} \tag{8}$$

Solve $\sqrt{3}x^2 + \sqrt[3]{5}x + \sqrt[4]{7} + \sqrt[5]{5x} = 0$.