Calculus

The function is $f(x) = (x-3)^2 + \frac{1}{2}$ has domain $\mathrm{D}_f : (-\infty, \infty)$ and Range $\mathrm{R}_f : \mathbb{R}$ and Range $\mathrm{R}_f : \left[\frac{1}{2}, \infty\right)$

$$\lim_{x \to a}$$

$$\lim_{x \to a} \frac{\sin x}{x} = 1$$

$$\lim_{x \to a} \frac{f(x) - f(a)}{x - a)} = f'(a)$$

$$\int \sin x \, \mathrm{d}x = -\cos x + \mathrm{C}$$

$$\int_a^b$$

$$\int_a^b x^2 \, \mathrm{d}x = \left| \frac{x^3}{3} \right|_a^b = \left(\frac{b^3}{3} - \frac{a^3}{3} \right)$$

$$\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$$

$$\sum_{k=1}^{\infty} ar^{k-1} = a + ar + ar^2 + \cdots = \frac{a}{1-r} \text{ where } |r| < 1$$

$$\int_a^b f(x) \, \mathrm{d}x = F(b) - F(a) \text{ where } \int f(x) \, \mathrm{d}x = F(x)$$

$$\int_a^b f(x) \, \mathrm{d}x = \lim_{x \to \infty} \sum_{k=1}^{n} f(x_k) \cdot \Delta x$$

$$\vec{v} = v_1 \vec{i} + v_2 \vec{j} = \langle v_1, v_2 \rangle$$