

- Functions -

Domain = x

Range = y

$$f(x) = ax^2 + bx + c \quad a \neq 0$$

If $a > 0$, minimum value where $x = \frac{-b}{2a}$



If $a < 0$, maximum value where $x = \frac{-b}{2a}$



$f(x)$	$f^{-1}(x)$
Range	Domain
Domain	Range

A $(x+B)^2 + C$; If $(x+B)^2 \geq 0$, then :

Minimum $\Rightarrow x^2$ is 0

Minimum value $\Rightarrow C$

If $a < b$ and $f(a) \leq f(b)$ $\therefore$ increasing

If $a < b$ and $f(a) \geq f(b)$ $\therefore$ decreasing

$$a \sin bx + c$$

$$\text{minimum} = c - a$$

$$\text{maximum} = c + a$$

Sketch Functions :

- i. Min/Max value
- ii. Check by completing square
- iii. $y = c$
- iv. Factorise to find x
- v. Min/max (x, c)
- vi. $y \geq 0, x \geq 0$.

(92) $\pi \int_a^b y^2 dx$

(93) $\pi \int_a^b x^2 dy$

(94) $\int_a^b y_2 - y_1 dx$

(95) $\int_a^b y dx$

(96) (a) $\frac{dA}{dt}$

(b) $\frac{dV}{dt}$

(c) $\frac{dy}{dt}$

(97) (a) $\vec{AO} + \vec{OB}$

(b) $\vec{CO} + \vec{OD}$

(c) $\vec{BO} + \vec{OC}$

(98) $1 - \sin^2 x = \cos^2 x$

(99) $1 - \cos^2 x = \sin^2 x$

(100) Sin (+)ve All (+)ve

Tan (+)ve Cos (+)ve

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Page 15 of 15