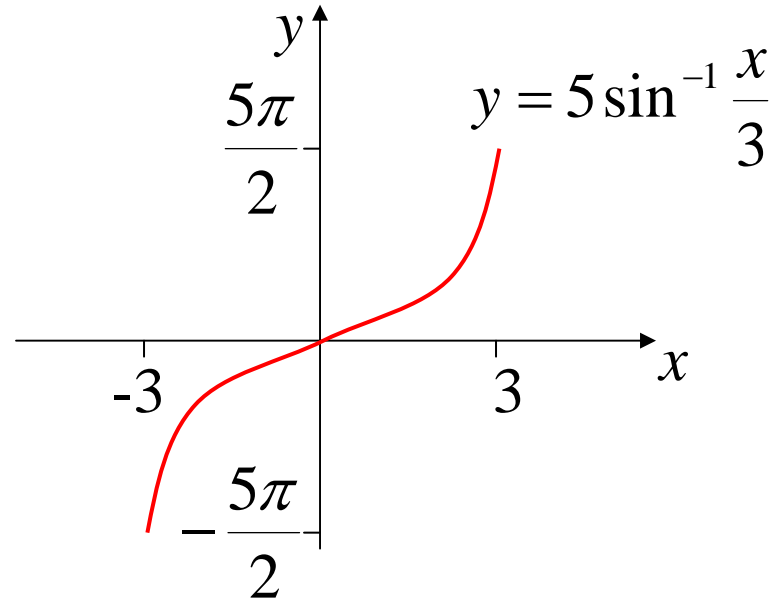


# Graphing Inverse Trig Functions

e.g (i)  $y = 5 \sin^{-1} \frac{x}{3}$

Domain:  $-1 \leq \frac{x}{3} \leq 1$   
 $-3 \leq x \leq 3$

Range:  $-\frac{\pi}{2} \leq \frac{y}{5} \leq \frac{\pi}{2}$   
 $-\frac{5\pi}{2} \leq y \leq \frac{5\pi}{2}$



$$(ii) y = \tan^{-1}(\sqrt{3-x^2})$$

Domain:  $3-x^2 \geq 0$

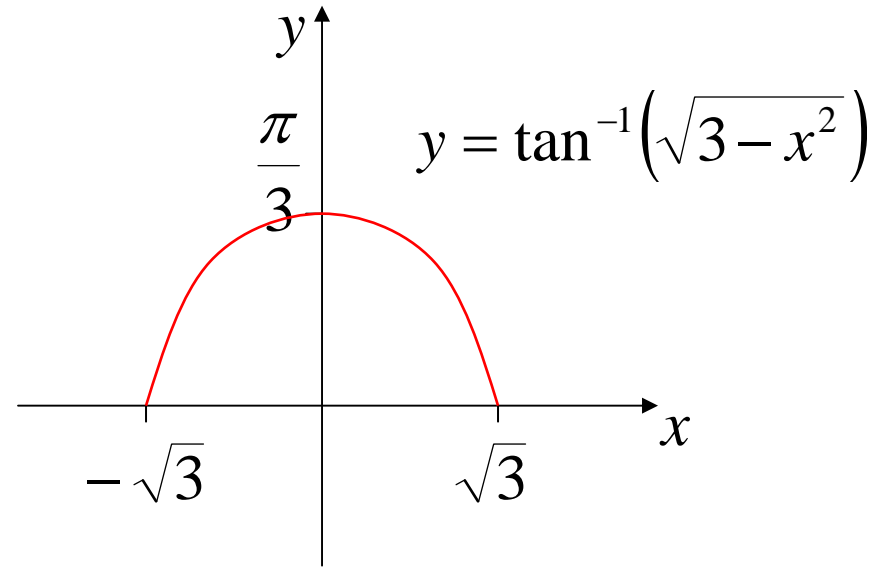
$$-\sqrt{3} \leq x \leq \sqrt{3}$$

Range:  $x = \sqrt{3}, y = \tan^{-1} 0$   
 $= 0$

$$x = -\sqrt{3}, y = \tan^{-1} 0$$
$$= 0$$

$$x = 0, y = \tan^{-1} \sqrt{3}$$
$$= \frac{\pi}{3}$$

$$0 \leq y \leq \frac{\pi}{3}$$

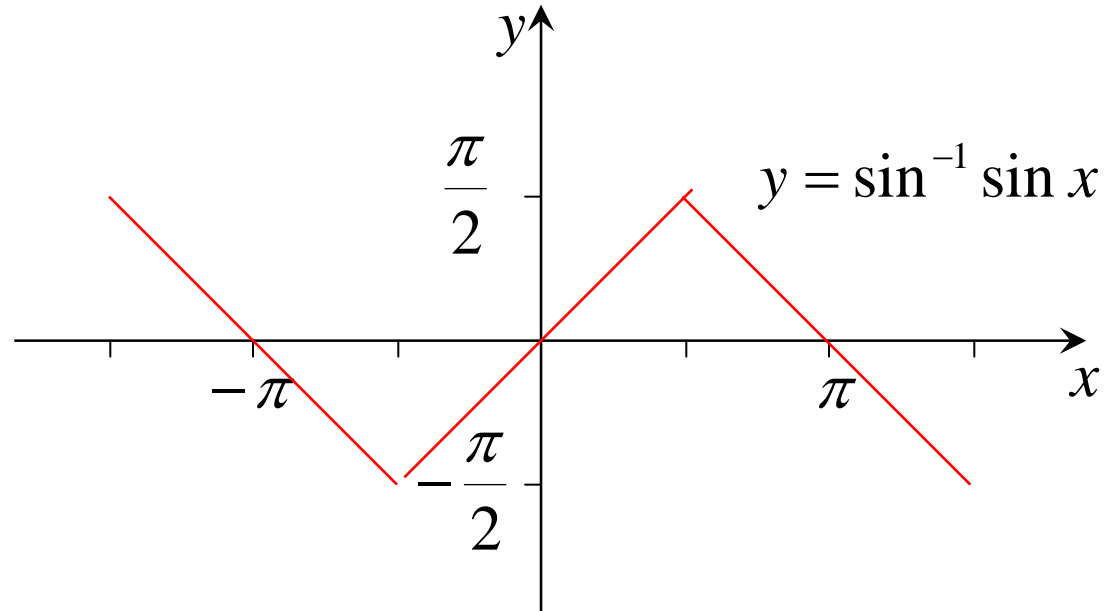


$$(iii) y = \sin^{-1} \sin x$$

Domain:  $-1 \leq \sin x \leq 1$

all real  $x$

Range:  $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$



$$(iv) y = \sin \sin^{-1} x$$

Domain:  $-1 \leq x \leq 1$

Range: when  $x = 1$ ,  $y = \sin \sin^{-1} 1$

$$= \sin \frac{\pi}{2}$$

$$= 1$$

when  $x = -1$ ,  $y = \sin \sin^{-1}(-1)$

$$= \sin\left(-\frac{\pi}{2}\right)$$

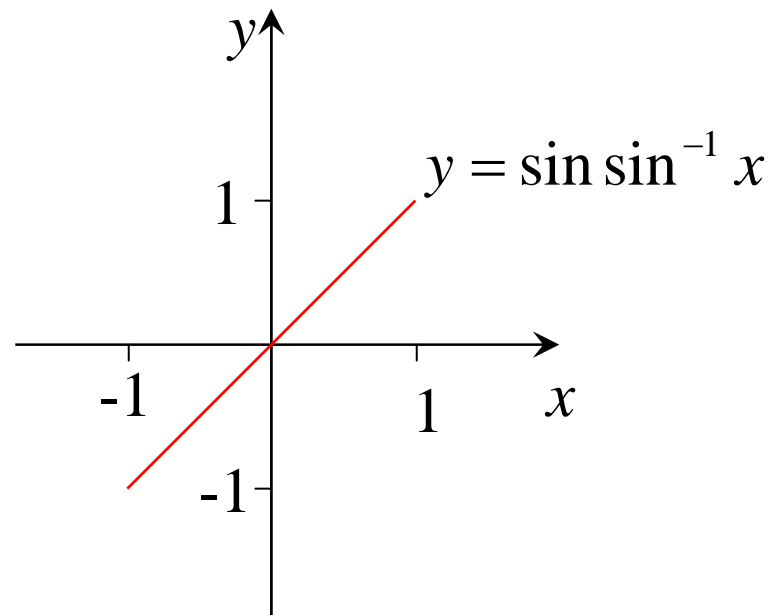
$$= -1$$

when  $x = 0$ ,  $y = \sin \sin^{-1} 0$

$$= \sin 0$$

$$= 0$$

$$-1 \leq y \leq 1$$



**Exercise 1C; 2 to 5ace,  
6a b i,iii, 9, 11 to 15**