

- ① How do you know if a function is a one-to-one function. In other words, how do you know the inverse of a function is also a function? (see Ch. 7-8)
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Ans: (1) the function passes the vertical and horizontal line test.

$$(2) \text{ if } (f \circ f^{-1})(x) \text{ and } (f^{-1} \circ f)(x) = x$$

• Homework review: Pg 742-743 #2, 8, 29-32.

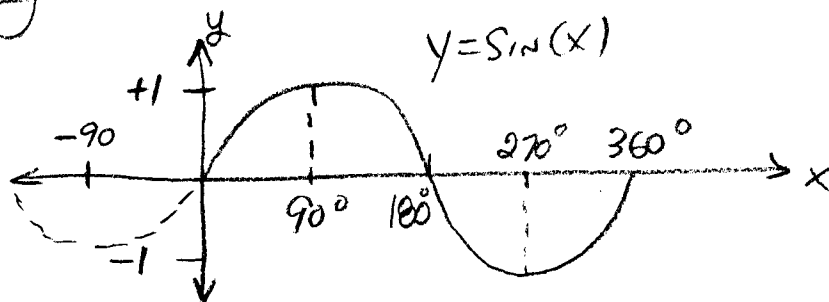
② AC voltage, 120 cycles per sec, Period = $\frac{1}{120}$ sec.

⑧ $P = 720^\circ$ ②⑨ $P = 6$ ③ $P = 9$

③① $P = 2\pi$ ③② $P = 8$

Ch. 13-7 Inverse Trig. Functions

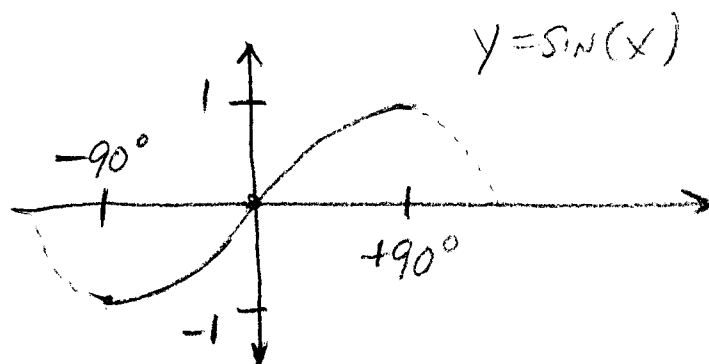
Is $y = \sin(x)$ a ONE-ONE function?



No. So how is $\sin^{-1}(x)$ a function?

The domain (the x values) of the inverse trig. functions ARE "RESTRICTED" to force the inverse $\sin$ to be a function.

The domain is -1 to $+1$ and the range is -90° to $+90^\circ$.



Called the $\sin^{-1}(x)$ or $\text{Arcsin}(x)$

See pg 747 for graph of $y = \sin^{-1}(x)$.

Read... "the angle whose sin is x "

$$\textcircled{\text{Ex}} \sin^{-1}(.4226) = ? \quad \boxed{25^\circ}$$

$$\cos^{-1}(.7431) = ? \quad \boxed{42^\circ}$$

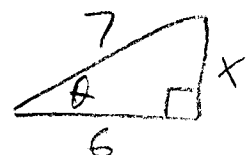
$$\tan^{-1}(4.0108) = ? \quad \boxed{76^\circ}$$

$$\text{Arcsin}(.9397) = ? \quad \boxed{70^\circ}$$

$\sin^{-1}(x), \text{Arcsin}(x), \cos^{-1}(x), \text{Arccos}(x), \tan^{-1}(x), \text{Arctan}(x)$

Ex 3b
Pg 748

$$\tan\left(\cos^{-1}\frac{6}{7}\right)$$

The angle θ whose $\cos$ is $\frac{6}{7} \Rightarrow$ 

$$\therefore x^2 = 7^2 - 6^2 = 49 - 36 = 13$$

$$\therefore x = \sqrt{13}$$

$$\therefore \tan \theta = \frac{\sqrt{13}}{6} = \frac{3.6056}{6} = \boxed{0.6009}$$

$$\text{or } \cos^{-1}\left(\frac{6}{7}\right) = \cos^{-1}(.8571) \cong 31^\circ \therefore \boxed{\tan 31^\circ = .6009}$$

• Homework: Pg 749 # 15-23. / Ref. Ch. 13 SG 752-756