

BE-Alg. 2 WEDNESDAY 1-27-10

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.

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

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

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

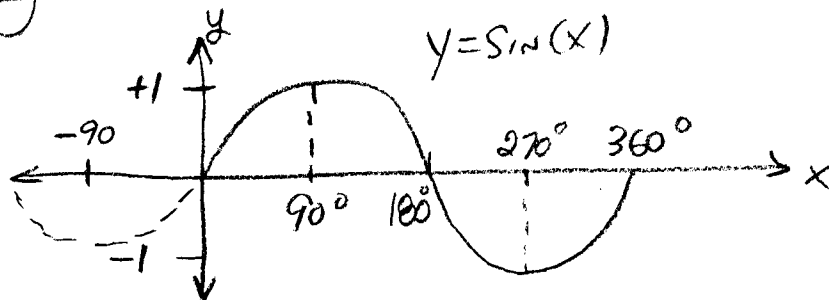
⑧  $P = 720^\circ$       ②⑨  $P = 6$       ③  $P = 9$

③①  $P = 2\pi$       ③②  $P = 8$

## Ch. 13-7 Inverse Trig. Functions

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

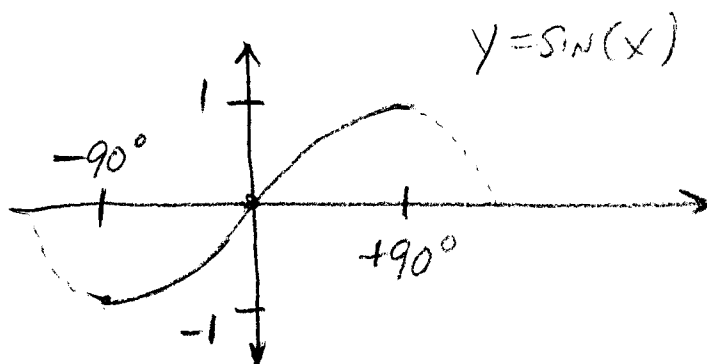


No. So how is  $\sin^{-1}(x)$  a function?

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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  $-90^\circ$  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  $x$ "

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

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

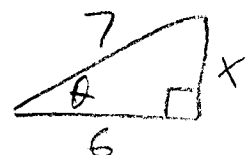
$$\tan^{-1}(4.0108) = ? \quad \boxed{76^\circ}$$

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

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

Ex 3b  
Pg 748

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

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

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

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

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

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

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