BE-Alg. 2 TUESDAY 2-1-11

(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)

ANS: (1) the function passes the vertical and horizontal line test.

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

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

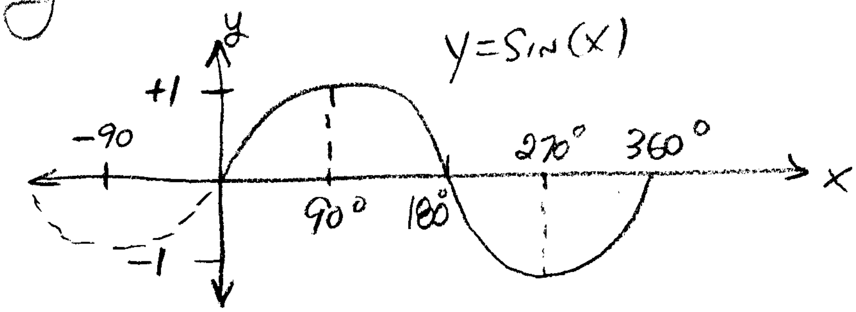
(2.) AC voltage, 120 cyles per sec, Period = $\frac{1}{120}$ sec.

(8.) $P = 720°$ (29) $P = 6$ (30) $P = 9$

(31) $P = 2\pi$ (32) $P = 8$

Ch. 13-7 Inverse Trig. Functions

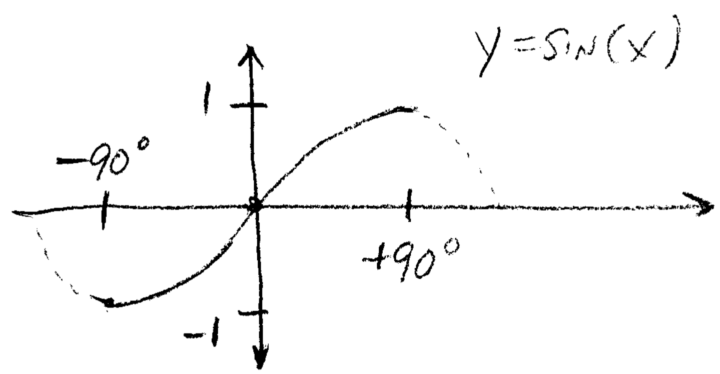
Is $y = \sin(x)$ a one-one function?



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 $+90°$



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

TIP: Enter "graph arcsin(x degrees)" into WolframAlpha.

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

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

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

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

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

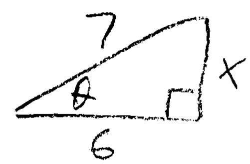
$\text{Arcsin}(.9397) = ?$ $\boxed{70^\circ}$

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

Ex 3b
Pg 748

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

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



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

$\therefore x = \sqrt{13}$

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

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

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