

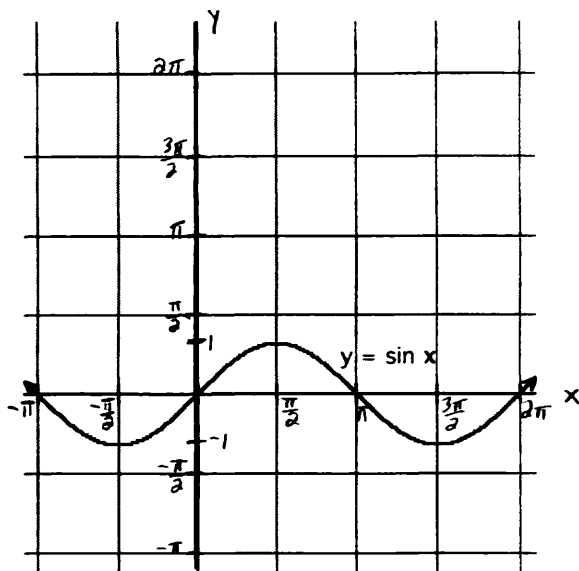
Name: \_\_\_\_\_

M\$6 Inverse Trigonometric Functions

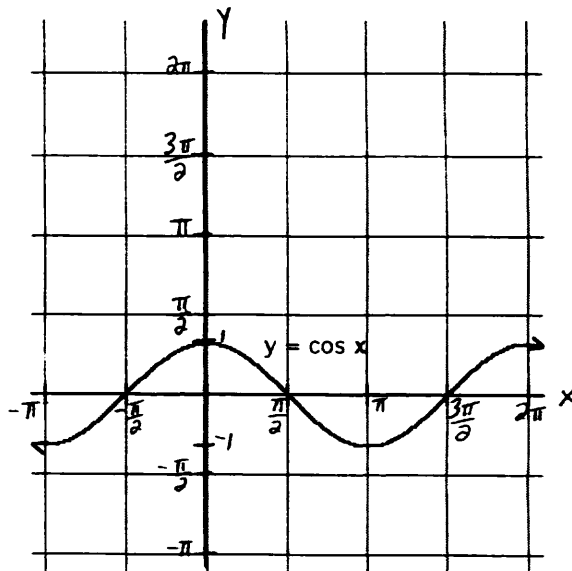
1. Fill in the first three rows of the table:

FUNCTION	DOMAIN	RANGE
$y = \sin x$		
$y = \cos x$		
$y = \tan x$		
$y = \text{Arcsin } x$ (or $y = \text{Sin}^{-1}x$ )		
$y = \text{Arccos } x$ (or $y = \text{Cos}^{-1}x$ )		
$y = \text{Arctan } x$ (or $y = \text{Tan}^{-1}x$ )		

2. The graph of  $y = \sin x$  on the interval  $-\pi \leq x \leq 2\pi$  is drawn below. On the same set of axes, sketch the graph of its inverse,  $y = \arcsin x$  (or  $y = \sin^{-1} x$ ).



3. The graph of  $y = \cos x$  on the interval  $-\pi \leq x \leq 2\pi$  is drawn below. On the same set of axes, sketch the graph of its inverse,  $y = \arccos x$  (or  $y = \cos^{-1} x$ ).

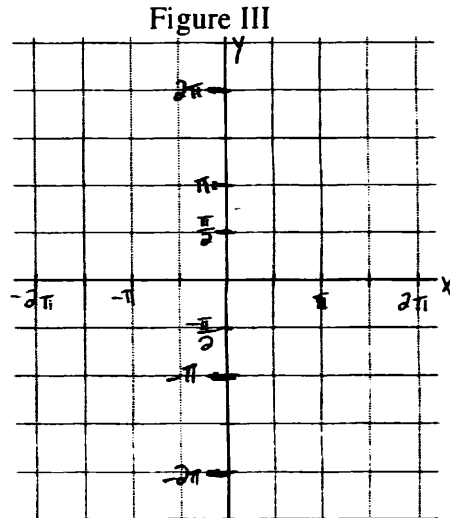
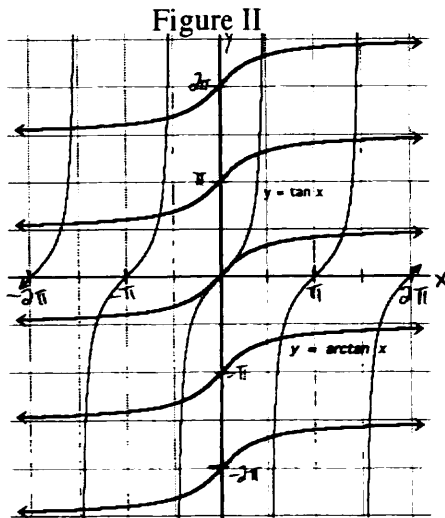
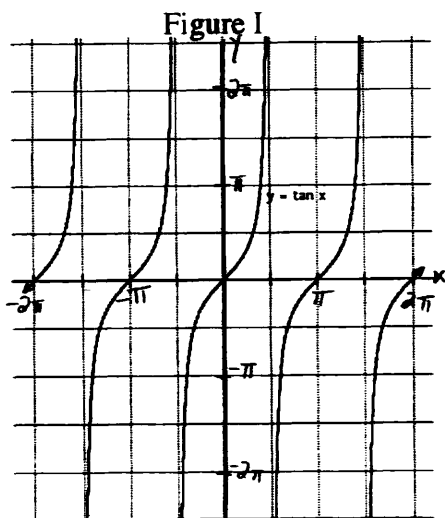


4. By reflecting the graph of  $y = \tan x$  (shown in Figure I) in the line  $y = x$ , we obtain the graph of its inverse,  $y = \arctan x$  (shown in Figure II).

a) Is  $y = \arctan x$  a function?

b) If not, what is the *restricted domain* for  $y = \tan x$  that would make its inverse a function?

c) Sketch and label the graph of  $y = \text{Arctan } x$  in Figure III.



### Examples:

Find the exact value of each of the following.

1.  $\tan(\text{Sin}^{-1}(-\frac{1}{2}))$

2.  $\cos(\text{Arctan}(-\frac{5}{12}))$

3.  $\sin(\text{Tan}^{-1}(1))$

4.  $\tan(\text{Arccos}(\frac{4}{5}))$

5.  $\sin(\text{Arccos}(-1))$

6.  $\sec(\text{Arccos}(\frac{1}{6}))$