

7. Which of the following functions does NOT have a period of 2π ?

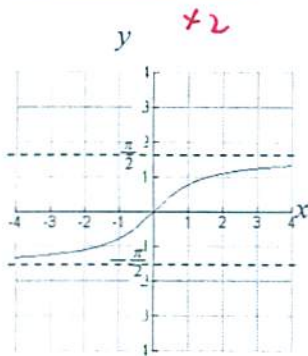
2pts

- A $f(x) = \sin x$
 +2 **B** $f(x) = \tan x$
 C $f(x) = \sec x$
 D $f(x) = \csc x$

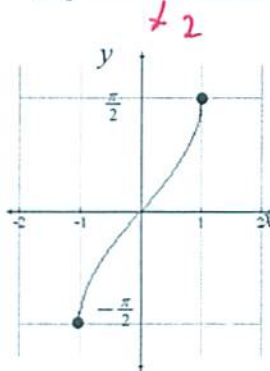
8. a. Write an equation for each inverse function graph (i-iii).

6pts

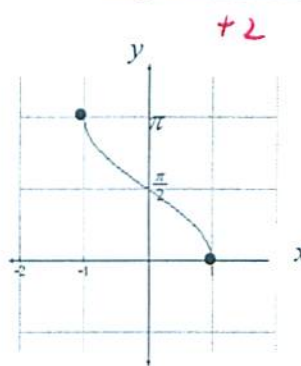
i. $y = \tan^{-1} x$



ii. $y = \sin^{-1} x$



iii. $y = \cos^{-1} x$



b. Use the following intervals to complete the table below.

$[-1, 1]$

$(-\infty, \infty)$

$[0, \pi]$

$\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

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

6pts

	$\sin^{-1} x$	$\cos^{-1} x$	$\tan^{-1} x$
Domain	$[-1, 1]$	$[-1, 1]$	$(-\infty, \infty)$
Range	$\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$	$[0, \pi]$	$\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

9. In terms of limits, describe the end behaviors of $f(x) = \tan^{-1} x$.

2pts

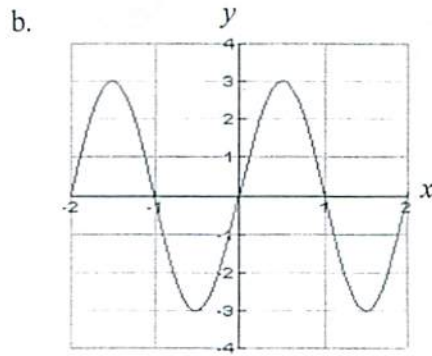
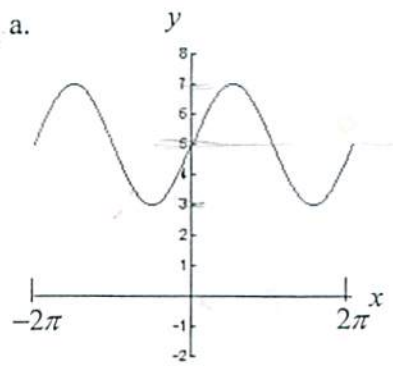
$\lim_{x \rightarrow -\infty} f(x) = -\pi/2$

$\lim_{x \rightarrow \infty} f(x) = \pi/2$

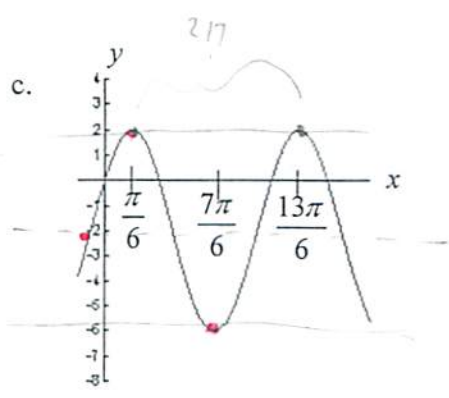
4. Write the sinusoidal equation for the following graphs

9pts

$y = 2\sin x + 5$



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



$2\pi = \text{period}$
 $\frac{2\pi}{4} = \frac{\pi}{2} = \frac{1}{2} \text{ rev}$
 $\frac{\pi}{6} - \frac{\pi}{2} = \frac{\pi}{3}$
 $\frac{\pi}{6} - \frac{3\pi}{6} = -\frac{2\pi}{6} = -\frac{\pi}{3}$

a. $y = 2\sin x + 5$
 b. $y = 3\sin \pi x$
 c. $y = 4\cos(x - \pi/6) - 2$

5. Determine the equation that best describes a sine curve with amplitude 3, period of 6, and a phase shift of $\frac{\pi}{2}$ to the right.

3pt

$\frac{2\pi}{B} = 6$
 $6B = 2\pi$
 $B = \pi/3$

$y = 3\sin \frac{\pi}{3}(x - \frac{\pi}{2})$

6. State the amplitude, period, the phase shift and vertical translation of the sinusoid relative to the basic function $f(x) = \sin x$ or $f(x) = \cos x$. Sketch the graph, marking the x- and y-axes appropriately.

8pts

a. $f(x) = 2\sin\left(3\left(x - \frac{\pi}{6}\right)\right) + 5$


amp 2
 period $\frac{2\pi}{3}$
 phase shift $\frac{\pi}{6}$
 vert. trans 5

$\frac{2\pi}{3}$

b. $f(x) = -5\cos(\pi(x+1))$

amp 5
 period 2
 phase shift -1
 vert. trans 0


$\frac{2\pi}{\pi}$

Circle answers 

HONORS PRECALCULUS

1. Determine the exact value of the following.

6pts

a. $\sin^{-1}\left(\frac{1}{2}\right) = \theta$ $\sin \theta = \frac{1}{2}$  $\left(\frac{\pi}{6}\right) \times 2$

b. $\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right) = \theta$  $\left(\frac{3\pi}{4}\right) \times 2$

c. $\tan^{-1}(\sqrt{3})$ $\left(\frac{\pi}{3}\right) \times 2$

2. Determine the exact value of the following.

6pts

a. $\cos\left(\sin^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)$ $\cos \theta = \left(\frac{1}{2}\right) \times 2$ $\sin \theta = \frac{\sqrt{3}}{2}$ $\theta = \frac{\pi}{3}$

b. $\sin\left(\tan^{-1}(-1)\right)$ $\sin \theta = \left(-\frac{1}{\sqrt{2}}\right) \times 2$ 

c. $\tan\left(\cos^{-1}\left(-\frac{1}{\sqrt{2}}\right)\right)$ $\tan \theta = \left(-1\right) \times 2$ 

3. Determine the exact value of the following.

4pts

a. $\sin\left(\csc^{-1}\left(\frac{8}{5}\right)\right) = \left(\frac{5}{8}\right) \times 2$ $\csc \theta = \frac{8}{5}$ $\sin \theta = \frac{5}{8}$

b. $\cos^{-1}\left(\cos\left(\frac{11\pi}{6}\right)\right) = \theta = \left(\frac{\pi}{6}\right) \times 2$

