Warm-up 2/3/17
Find the equations of the two lines that this function oscillates between.
$y = 4 + 8x + \sin 5x$

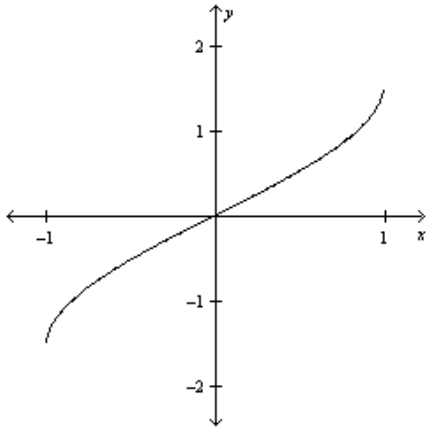
$y = 8x + 5$

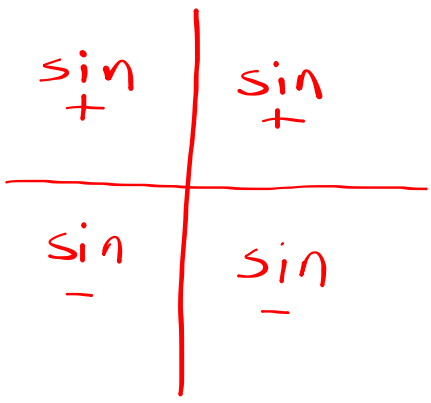
$y = 8x + 3$

4.7: Inverse Trigonometric Functions

Inverse Sine Function (Arcsine Function)

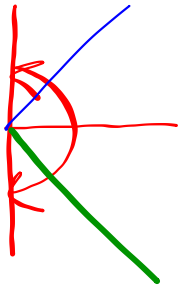
The unique angle y in the interval $[-\pi/2, \pi/2]$ such that $\sin y = x$ is the inverse sine (or arcsine) of x, denoted $\sin^{-1} x$ or $\arcsin x$.
The domain of $y = \sin^{-1} x$ is $[-1, 1]$ and the range is $[-\pi/2, \pi/2]$.





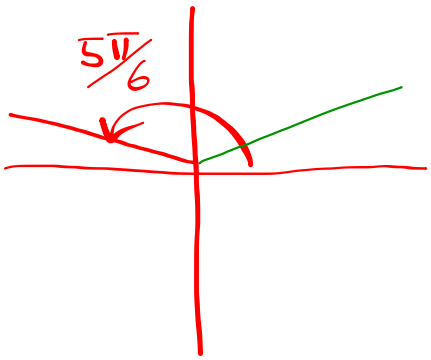
Find the exact value of each expression without a calculator.

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



2) $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\pi}{3}$

3) $\sin^{-1}\left(\frac{\pi}{2}\right)$ undefined



4) $\sin^{-1}\left(\sin\left(\frac{\pi}{9}\right)\right) = \frac{\pi}{9}$

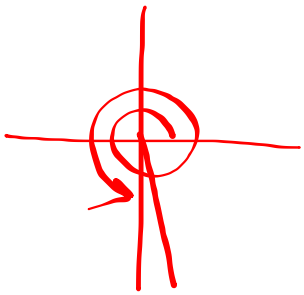
5) $\sin^{-1}\left(\sin\left(\frac{5\pi}{6}\right)\right) = \frac{\pi}{6}$

Use your calculator in radian mode to evaluate the inverse sine values.

1) $\sin^{-1}(-0.793) \approx -.916$

2) $\sin^{-1}(0.707) \approx .785$

3) $\sin^{-1}(\sin(3.49\pi)) \approx -1.539$

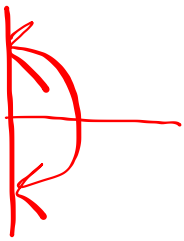


Inverse Cosine Function (Arccos Function)

The unique angle y in the interval $[0, \pi]$ such that $\cos y = x$ is the inverse cosine (or arccos) of x, denoted $\cos^{-1} x$ or $\arccos x$.
The domain of $y = \cos^{-1} x$ is $[-1, 1]$ and the range is $[0, \pi]$.

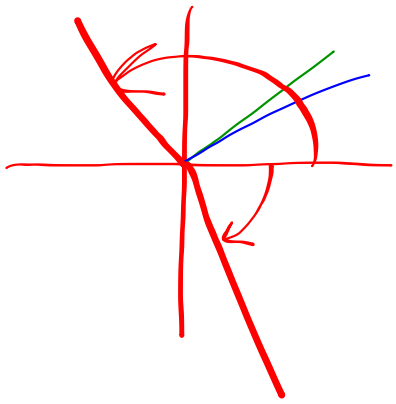
Inverse Tangent Function (Arctan Function)

The unique angle y in the interval $[-\pi/2, \pi/2]$ such that $\tan y = x$ is the inverse tangent (or arctan) of x, denoted $\tan^{-1} x$ or $\arctan x$.
The domain of $y = \tan^{-1} x$ is $[-\infty, \infty]$ and the range is $[-\pi/2, \pi/2]$.



Find the exact value of the expression without a calculator.

1) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = \frac{\pi}{4}$



2) $\tan^{-1}\sqrt{3} = \frac{\pi}{3}$

3) $\cos^{-1}(\cos(-1.1)) \approx 1.1$

4) $\cos^{-1}\left(\sin\left(-\frac{\pi}{3}\right)\right) = \frac{2\pi}{3}$ (neg)

Assignment: pp. 385 - 386
1 - 20, 23 - 28, 59, 60, 62