

1. Graph each equation and find the amplitude, period, phase shift, and vertical shift. Label your axes.

a.  $y = -5\sin\left(\frac{1}{2}x + \frac{\pi}{4}\right) + 2$

GRAPH

Amplitude:

Period:

Phase shift:

Vertical shift:

Domain:

Range:

b.  $y = 2\cos(2\theta + 180) - 4$

GRAPH

Amplitude:

Period:

Phase shift:

Vertical shift:

Domain:

Range:

c.  $y = -3\tan(2\theta - 45)$

GRAPH

Amplitude:

Period:

Phase shift:

Vertical shift:

Domain:

Range:

d.  $y = -3 \csc 3 \left( x + \frac{\pi}{12} \right) + 2$

GRAPH

Amplitude:

Period:

Phase shift:

Vertical shift:

Domain:

Range:

e.  $y = 2 \cot 2(\theta - 30) - 1$

GRAPH

Amplitude:

Period:

Phase shift:

Vertical shift:

Domain:

Range:

2. Given the following information, write an equation of the form  $y = A \sin B(x \pm C) \pm D$

$$\text{Amplitude} = \frac{1}{2}, \quad \text{Period} = \frac{\pi}{4}, \quad \text{Phase shift} = -\pi, \quad \text{Vertical Shift} = -5$$

3. Given the following information, write an equation of the form  $y = A \cos B(\theta \pm C) \pm D$

$$\text{Amplitude} = 17, \quad \text{Period} = 180^\circ, \quad \text{Phase shift} = 90^\circ, \quad \text{Vertical Shift} = \frac{1}{4}$$

4. Identify the amplitude, period, phase shift, and vertical shift. Then write an equation for this *tangent* curve.

Amplitude:

Period:

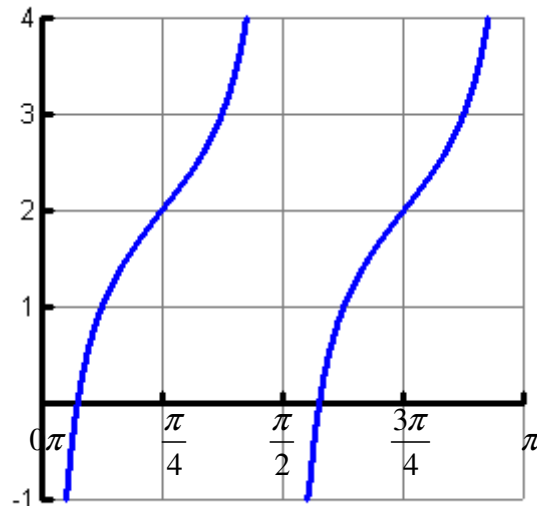
Phase shift:

Vertical shift:

Domain:

Range:

EQUATION:



Equivalent Cotangent Equation:

5. Identify the amplitude, period, phase shift, and vertical shift. Then write an equation for this *cosine* curve.

Amplitude:

Period:

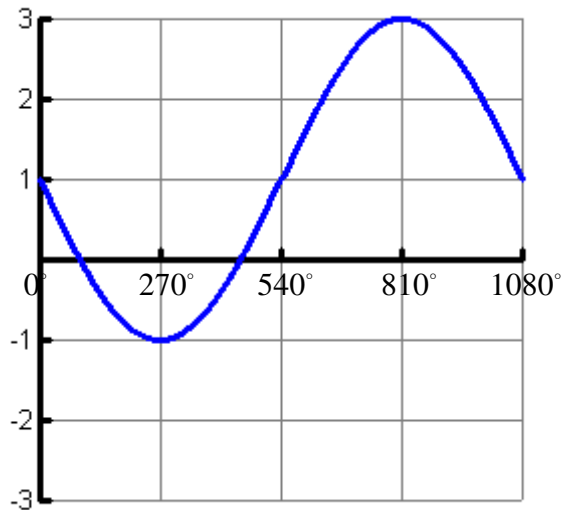
Phase shift:

Vertical shift:

Domain:

Range:

EQUATION:



Equivalent Sine equation:

6. Graph  $y = \tan x$  and  $y = \tan^{-1} x$ . State the domain and range for each. State if they are functions.

GRAPH

GRAPH

Domain:

Domain:

Range:

Range:

Function?

Function?

7. Graph  $y = \sin \theta$  and  $y = \sin^{-1} \theta$ . State the domain and range for each. State if they are functions.

GRAPH

GRAPH

Domain:

Domain:

Range:

Range:

Function?

Function?

8. Find ALL values of  $x$  or  $\theta$  that satisfy each equation.

a.  $\theta = \tan^{-1}(1)$

b.  $x = \text{arc csc}(-2)$

c.  $x = \text{Sec}^{-1}(\sqrt{2})$

d.  $\theta = \text{Arc tan}(-1)$

e.  $x = \cos^{-1}\left(\frac{1}{2}\right)$

f.  $\theta = \arcsin\left(-\frac{\sqrt{3}}{2}\right)$

g.  $x = \text{Arc cos}\left(-\frac{\sqrt{3}}{2}\right)$

h.  $\theta = \text{Arc sin}(1)$

i.  $\theta = \text{Sin}^{-1}(-.65)$

j.  $x = \tan^{-1}(\sqrt{3})$

k.  $\theta = \arccos(-.375)$

l.  $x = \text{Cot}^{-1}(\sqrt{3})$

Multiple Choice. Circle ALL answers that apply. **Multiple responses are possible.**

9. These functions have a period of  $\frac{\pi}{2}$ .

a.  $y = \sin\left(\frac{1}{2}x\right)$    b.  $y = \tan\left(\frac{1}{4}x\right)$    c.  $y = \csc(4x)$    d.  $y = \cot(2x)$    e.  $y = -\cos 2\left(x - \frac{\pi}{2}\right) + 1$

10. These functions are all positive in quadrant IV.

a.  $y = -\frac{1}{2}\cos\theta$    b.  $y = -3\sin\theta$    c.  $y = 4\sec\theta$    d.  $y = -\frac{1}{4}\cot\theta$    e.  $y = -3\csc(\theta)$

For each radian or degree measure, choose the trigonometric values that are correct. **Multiple correct answers per question are possible.**

11.  $x = \frac{2\pi}{3}$

a.  $\sin x = -\frac{\sqrt{3}}{2}$       b.  $\cos x = -\frac{1}{2}$       c.  $\cot x = -\frac{\sqrt{3}}{3}$       d.  $\sec x = -\frac{2\sqrt{3}}{3}$       e.  $\csc x = \sqrt{2}$

12.  $\theta = 240^\circ$

a.  $\sin \theta = -\frac{\sqrt{3}}{2}$       b.  $\sec \theta = 2$       c.  $\tan \theta = \sqrt{3}$       d.  $\tan x = \frac{\sqrt{3}}{3}$       e.  $\cos x = -\frac{\sqrt{3}}{2}$

Find the value of the unique real number  $\theta$  between  $0^\circ$  and  $360^\circ$  that satisfies the two given conditions. **Only one answer is possible.**

13.  $\sec \theta = -2$  and  $\tan \theta > 0$ .

a.  $120^\circ$       b.  $150^\circ$       c.  $210^\circ$       d.  $240^\circ$       e.  $300^\circ$

14.  $\csc \theta = -\sqrt{2}$  and  $\cos \theta > 0$ .

a.  $210^\circ$       b.  $225^\circ$       c.  $300^\circ$       d.  $315^\circ$       e.  $330^\circ$