

## Trigonometry Extra Credit Assignment

Find one positive and one negative coterminal angle of each of the following. There is no need to graph the angles.

1)  $30^\circ$

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

3)  $\frac{5\pi}{2}$

4)  $\frac{\pi}{3}$

Use the unit circle to find the exact value of each of the following. (Exact value means no decimal approximations.)

5)  $\tan\left(-\frac{10\pi}{3}\right) =$

6)  $\csc\frac{7\pi}{3} =$

7)  $\sec\frac{4\pi}{3} =$

8)  $\cos\left(-\frac{11\pi}{6}\right) =$

9)  $\sin\frac{13\pi}{4} =$

10)  $\csc\left(-\frac{5\pi}{6}\right) =$

11)  $\tan\left(-\frac{\pi}{6}\right) =$

12)  $\cot\frac{2\pi}{3} =$

13)  $\sec\left(-\frac{19\pi}{3}\right) =$

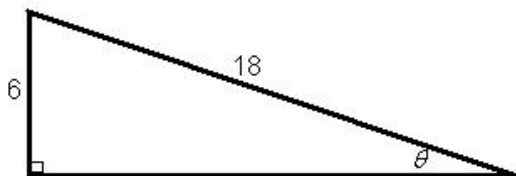
14)  $\cot\frac{\pi}{4} =$

15)  $\cot\frac{11\pi}{6} =$

16)  $\sin\frac{21\pi}{4} =$

Find the exact values of the six trigonometric functions of  $\theta$ .

17)



$\sin \theta =$

$\csc \theta =$

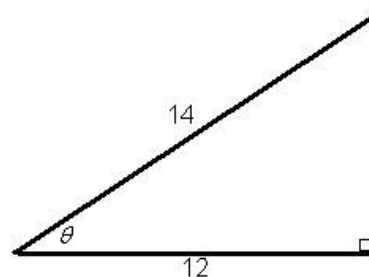
$\cos \theta =$

$\sec \theta =$

$\tan \theta =$

$\cot \theta =$

18)



$\sin \theta =$

$\csc \theta =$

$\cos \theta =$

$\sec \theta =$

$\tan \theta =$

$\cot \theta =$

For each of the following, find the reference angle  $\theta'$ .

19)  $\theta = 57^\circ$

20)  $\theta = 113^\circ$

21)  $\theta = \frac{7\pi}{6}$

22)  $\theta = \frac{5\pi}{3}$

Find the exact value of the six trigonometric functions of an angle  $\theta$ , in standard position, given the following information.

23) Given  $\sin \theta = \frac{3}{5}$  the angle  $\theta$  lies in quadrant II.    24) Given  $\tan \theta = \sqrt{3}$  the angle  $\theta$  lies in quadrant III.

$\sin \theta =$                        $\csc \theta =$

$\sin \theta =$                        $\csc \theta =$

$\cos \theta =$                        $\sec \theta =$

$\cos \theta =$                        $\sec \theta =$

$\tan \theta =$                        $\cot \theta =$

$\tan \theta =$                        $\cot \theta =$

25)  $\tan \theta = -\frac{\sqrt{5}}{2}$ ,  $\sin \theta < 0$

26)  $\cos \theta = \frac{\sqrt{3}}{2}$ ,  $\sin \theta < 0$

$\sin \theta =$                        $\csc \theta =$

$\sin \theta =$                        $\csc \theta =$

$\cos \theta =$                        $\sec \theta =$

$\cos \theta =$                        $\sec \theta =$

$\tan \theta =$                        $\cot \theta =$

$\tan \theta =$                        $\cot \theta =$

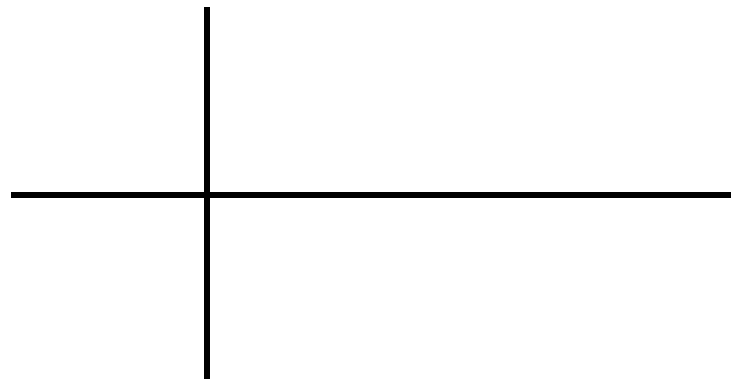
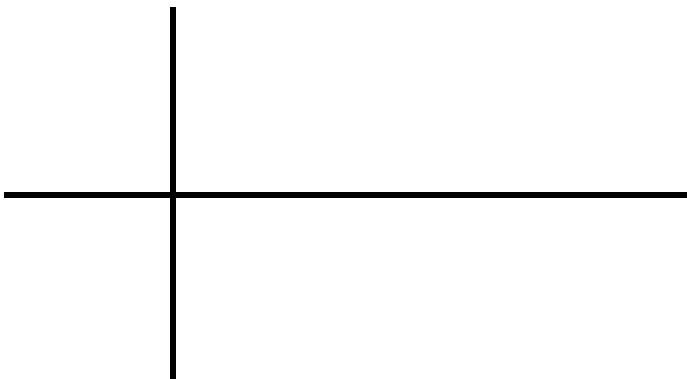
Graph each of the following trig functions. Find the Amplitude (Amp), Period (Per) and Initial Interval (I.I.) for each. You may also want to find the Phase Shift (P.S.) for sin, cos, sec and csc.

27)  $y = \sin x$

28)  $y = -2 \sin 4x$

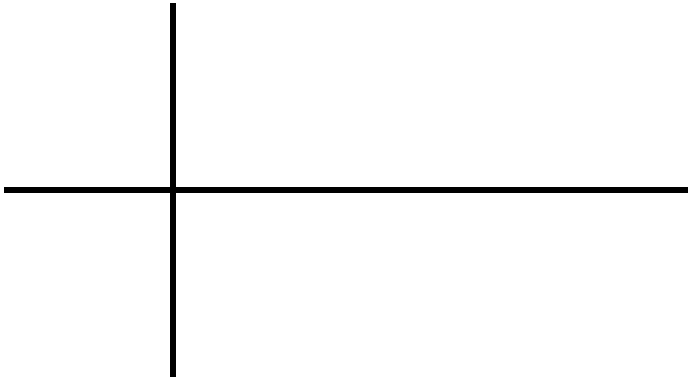
Amp:    Per:    P.S.:    I.I.:

Amp:    Per:    P.S.:    I.I.:



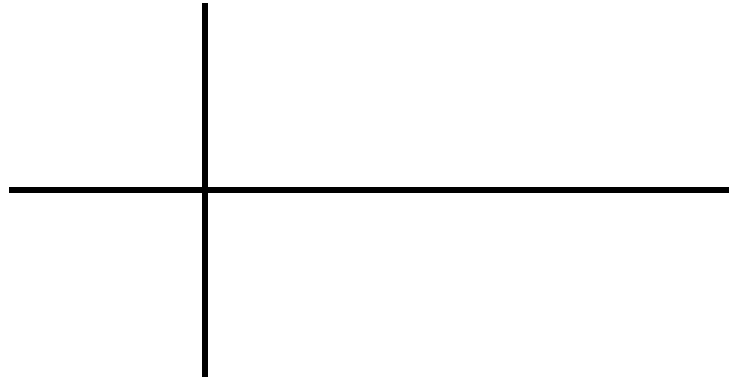
29)  $y = \cos x$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



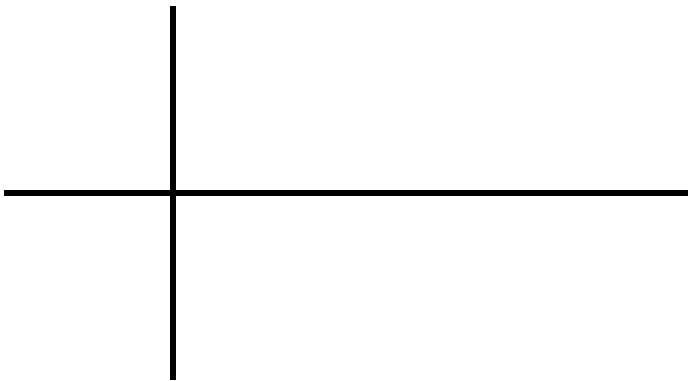
30)  $y = 3 \cos(2x + \pi) - 1$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



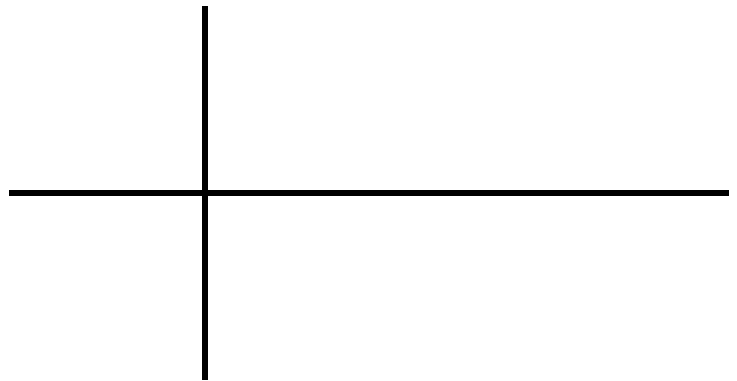
31)  $y = \csc x$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



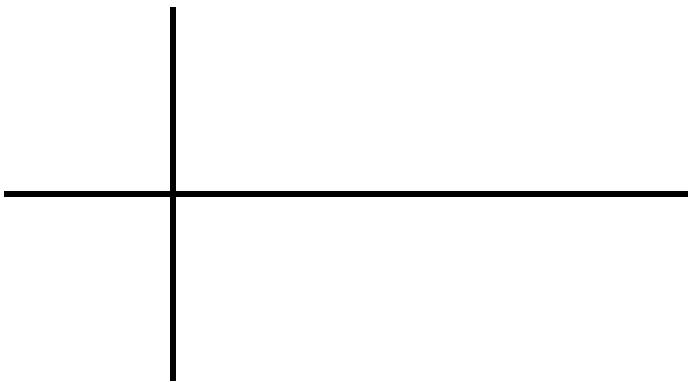
32)  $y = 2 \csc \frac{x}{2}$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



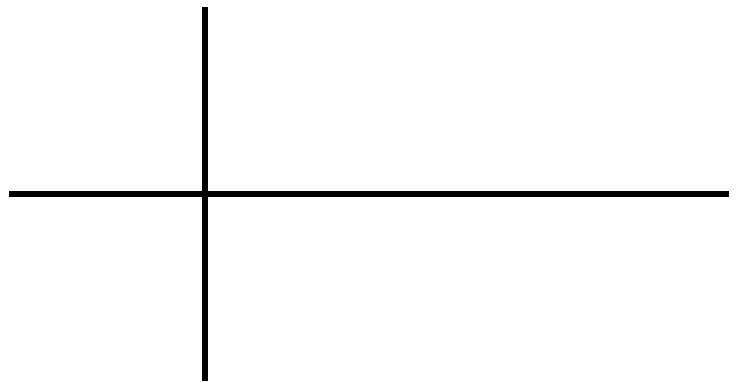
33)  $y = \sec x$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



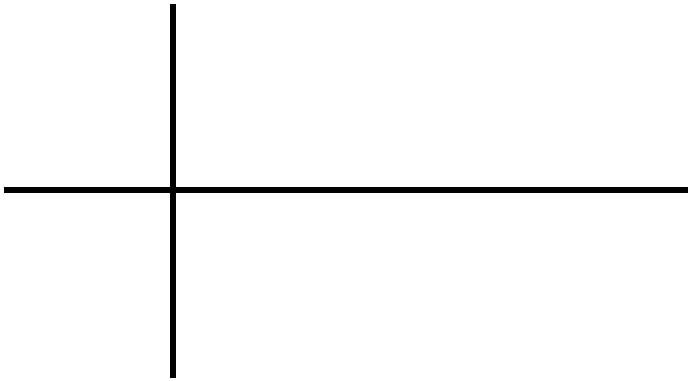
34)  $y = -2 \sec(3x - \pi)$

**Amp:**    **Per:**    **P.S.:**    **I.I.:**



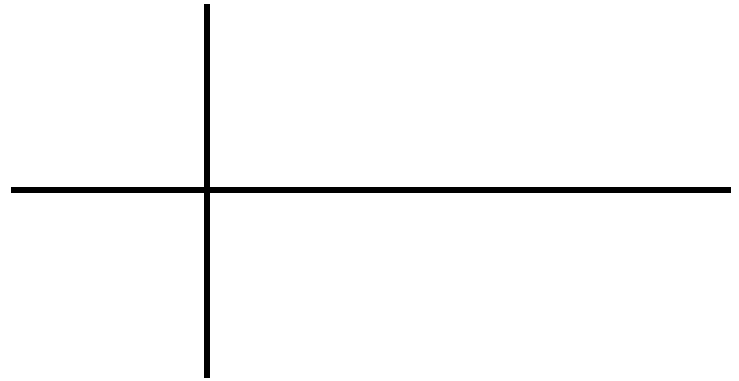
35)  $y = \tan x$

**Amp:**      **Per:**      **I.I.:**



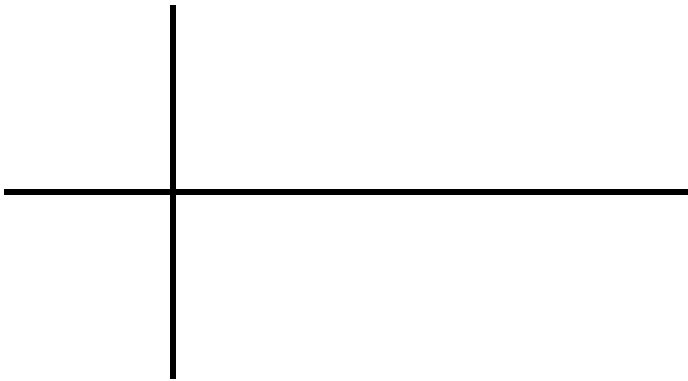
36)  $y = 2 \tan 2x$

**Amp:**      **Per:**      **I.I.:**



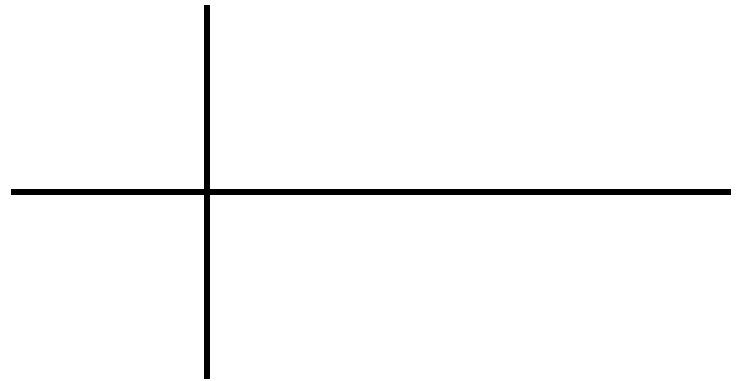
37)  $y = \cot x$

**Amp:**      **Per:**      **I.I.:**



38)  $y = \cot\left(2x - \frac{\pi}{4}\right)$

**Amp:**      **Per:**      **I.I.:**



39) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

$$\cos \theta = -\frac{\sqrt{3}}{2} \quad \theta = \underline{\hspace{2cm}}$$

40) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

$$\csc \theta = -2 \quad \theta = \underline{\hspace{2cm}}$$