

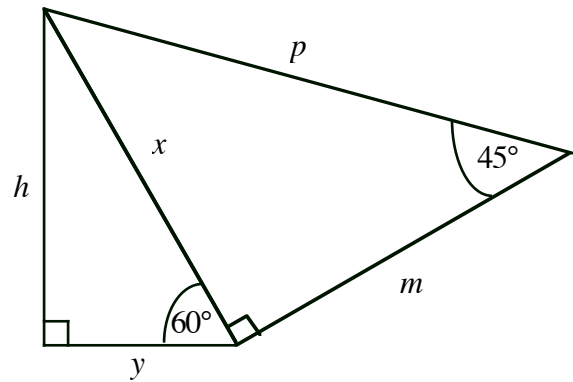
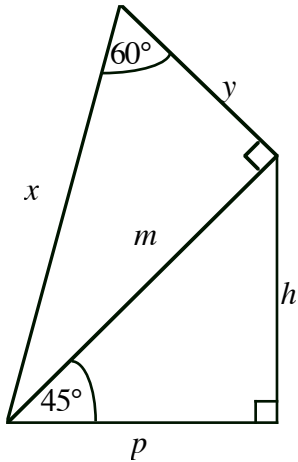
Final Exam Pre-Test

Note: The problems/exercises presented here are a good representation of the types of problems that will appear on the final exam. However, it is possible that other exercises not included here might also appear on the Final Exam. These exercises may be similar to—or the same as—those found on chapter tests.

1. Find the values of $h, m, p, x,$ and $y,$ which represent the lengths of the sides of these triangles. Simplify completely.

a) $x = 4\sqrt{3}$

b) $p = 12$



$h =$	$m =$
$p =$	$y =$

$h =$	$m =$
$p =$	$y =$

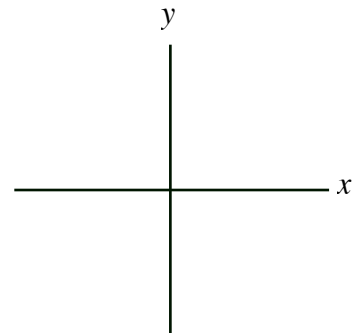
2. Based on the given information, in which quadrant does θ terminate. (You may use the x - y -axes at right to assist you.)

a) $\tan \theta < 0$ and $\sec \theta > 0$

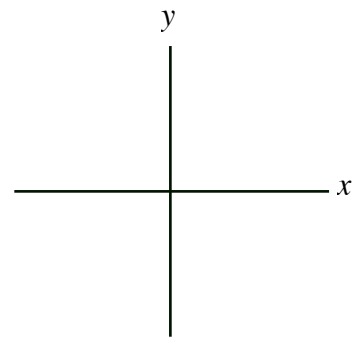
b) $\csc \theta > 0$ and $\cos \theta < 0$

c) $\cot \theta > 0$ and $\sin \theta > 0$

d) $\csc \theta < 0$ and $\tan \theta < 0$



3. Locate the given point in the x - y -plane, and draw a positive angle θ whose terminal side contains the point. Then, find the values of the six trig functions of θ . Simplify each value. Rationalize the denominator, if necessary.



a) point $(0, -5)$

b) point $(-4, 2)$

$\sin \theta =$

$\sin \theta =$

$\cos \theta =$

$\cos \theta =$

$\tan \theta =$

$\tan \theta =$

$\cot \theta =$

$\cot \theta =$

$\sec \theta =$

$\sec \theta =$

$\csc \theta =$

$\csc \theta =$

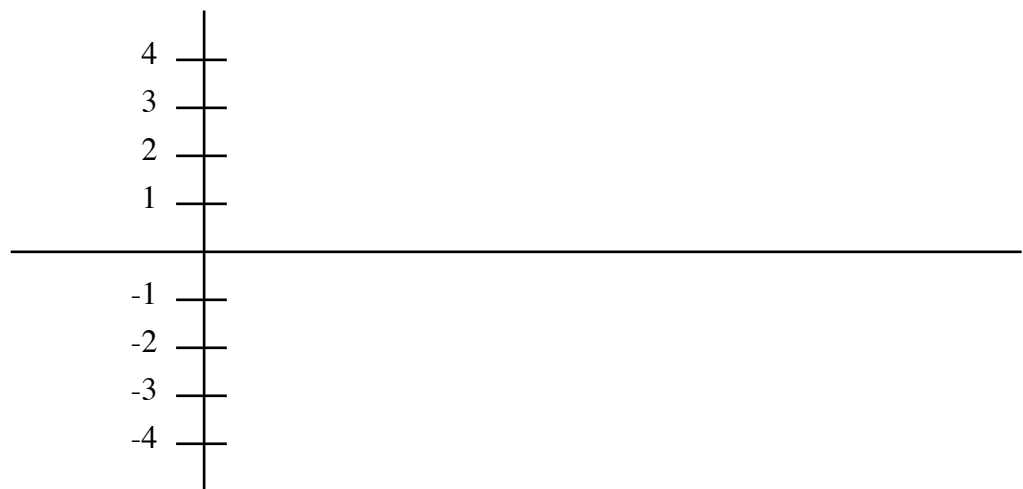
4. Graph **TWO** cycles of $f(x) = 3\cos\left(\frac{5}{8}x\right)$ Mark each important x -axis value.

a) Ampl:

b) Reflected?

c) Freq:

d) Per:



5. Graph **ONE** cycle of $f(x) = -2\sin\left(\frac{3}{4}x + \frac{\pi}{8}\right)$ Mark each important x -axis value.

a) Guide function $g(x) =$

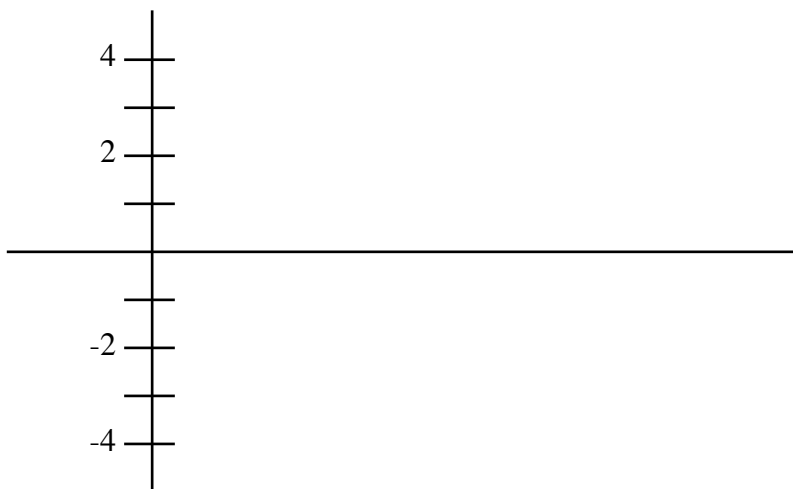
b) Horizontal shift:

Ampl: = Reflected?

Freq = Period =

c) Use this chart to identify the shifted x -values and draw the graph.

Feature	Original x	Shifted x



6. Graph **TWO** branches of $f(x) = -\tan\left(\frac{3}{4}x\right)$. Mark each important x -axis value.

For the guideline graph:

$g(x) =$

a) Ampl:

b) Refl:?

c) Freq:

d) Per:



7. Graph **TWO** branches of $f(x) = \cot\left(\frac{4}{5}x\right)$. Mark each important x -axis value.

For the guideline graph:

$g(x) =$

a) Ampl:

b) Refl:?

c) Freq:

d) Per:



8. Evaluate each.

a) $\sin(210^\circ)$

b) $\cos(-135^\circ)$

c) $\sec(180^\circ)$

d) $\cot(-120^\circ)$

e) $\tan(495^\circ)$

f) $\csc(390^\circ)$

g) $\cos(300^\circ)$

h) $\sin(270^\circ)$

i) $\tan(-90^\circ)$

9. Evaluate each.

a) $\cot\left(\frac{11\pi}{6}\right)$

b) $\sin\left(\frac{5\pi}{3}\right)$

c) $\sec(3\pi)$

d) $\cos\left(-\frac{4\pi}{3}\right)$

e) $\csc\left(-\frac{7\pi}{4}\right)$

f) $\tan\left(\frac{7\pi}{4}\right)$

g) $\sin(5\pi)$

h) $\cos\left(\frac{7\pi}{2}\right)$

i) $\cot(-3\pi)$

10. Evaluate each.

a) $\sin^{-1}\left(\frac{1}{2}\right)$

b) $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$

c) $\cos^{-1}(1)$

d) $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$

e) $\tan^{-1}(\sqrt{3})$

f) $\arccos\left(\frac{1}{2}\right)$

g) $\arctan\left(-\frac{\sqrt{3}}{3}\right)$

i) $\cos^{-1}(0)$

j) $\sin^{-1}(0)$

11. Using the sum, difference, double angle, or half angle formulas, evaluate the following.

a) $\sin(15^\circ)$

b) $2 \sin\left(\frac{13\pi}{12}\right) \cos\left(\frac{13\pi}{12}\right)$

12. Find both $\sin(2A)$ and $\cos(2A)$ based on the given information. Simplify.

$$\sec A = \frac{3}{2}, \quad 0^\circ < A < 90^\circ,$$

Show work here:

$$x =$$

$$y =$$

$$r =$$

$$\cos A =$$

$$\sin A =$$

$$\text{a) } \sin(2A) =$$

$$\text{b) } \cos(2A) =$$

13. Prove each identity.

a) $\csc x - \cot x \cos x = \sin x$

b) $\frac{\csc x}{\cot x} - \frac{\cot x}{\csc x} = \sin x \tan x$

14. Solve for θ , $0^\circ \leq \theta < 360^\circ$.

$$\tan^2 \theta - \tan \theta = 0$$

15. Solve for x , $0 \leq x < 2\pi$.

$$\sin 2x - \sin x = 0$$