Trigonometry review drill

1. For an angle of $62°$ in standard position (measured from $0°$):
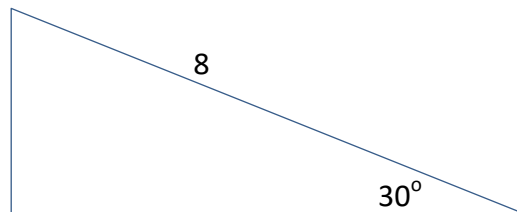
a) Give *two* coterminal angles, one positive and one negative

b) Find the complement and supplement of this angle

c) Convert this angle to π radian measure

3. a) Change $84°$ to π^r

b) 5^r to $°$ [Note: this is from pure radians, not π^r]

4. Find the missing sides of the triangle shown:

5. Angle θ (in standard position) has terminal side going through $(-2, 7)$.

a) Find the value of all 6 trig functions for this angle.

b) What are the coordinates of the point where the terminal side of θ intersects the unit circle?

6. Evaluate

y = sin (−45)   y = csc 90

y = tan (π/6)   y = cot (−π/4)

y = cos(−7π/3)   y = sin 7π

7. a)   Answer in interval notation where necessary:

                              Domain   Range

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

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

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

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

$\cos(\tan^{-1}(3/4))$ $\cos^{-1}(\cos(-\pi/4))$

sin(arccos (x))

(Hint: Notice that cos θ = x , that is, x/1, where x is adjacent and 1 is hypotenuse; find the opposite side, and you can then find sinθ)

sec(arctan(x/3))

(Same hint as above, but for tan θ = x/3, you will find the missing side and express its secant value, that is, 1/cosθ)

8. Fill in the blanks via the cofunction identities:

sin(41) =   cot (π/5) =   sec(0) =

9. a)   y = 2cos(π x) − 4   amplitude =   period =

Name the transformations in proper order:
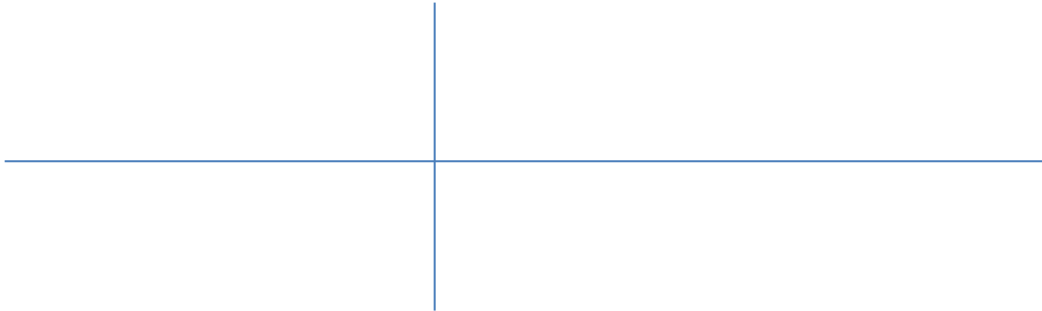
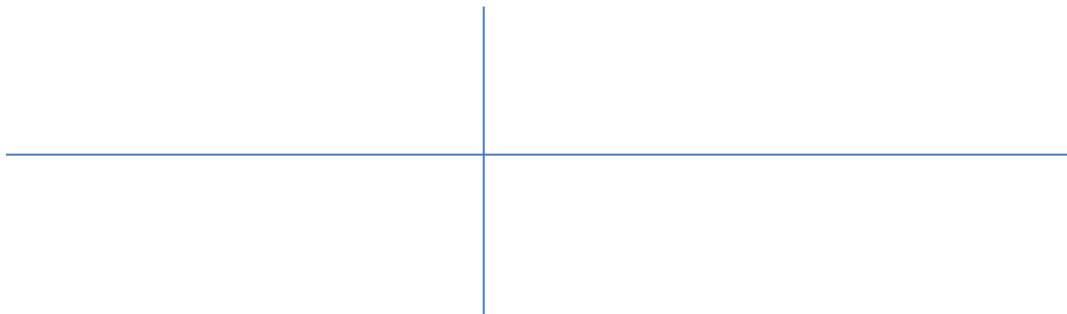b) y = −sin(x + π/3)   amplitude =   period =

Name the transformations in proper order:

c) Sketch two periods of $f(x) = 2\sin\left(\dfrac{1}{3}x + \dfrac{\pi}{2}\right)$

d) Sketch two periods of $f(x) = -3\cos(\pi x)$:

10. Evaluate by an appropriate angle sum, difference, half or double angle formula:

a) $\tan(5\pi/12)$ $\sin(5\pi/12)$

b) $\cos(105^\circ)$ $\tan(105^\circ)$

c) $\sin(\pi/8)$ $\tan(\pi/8)$

11. Verify the trigonometric identities:

$$\cos^2 x + \cos^2 x \tan^2 x = 1$$

$$\cos x + \sin x \tan x = \sec x$$

12. a) Solve for x on the interval $[0, 2\pi]$:

$$1 + \cos x = 2\sin^2 x$$

b) Solve for x in the following equation, finding **all** solutions:

$$2\cos(3x) = -1$$

13. Suppose angles α and β are in the standard position (that is, measured as usual from $0°$) and suppose further that:

$\dfrac{3\pi}{2} < \alpha < \pi$ and $\cos \alpha = 5/13$ AND $\dfrac{3\pi}{2} < \beta < 2\pi$ and $\sin \beta = -1/2$

a) In which quadrant is angle α?

b) In which quadrant is angle β?

c) Find $\cos \beta$

d) Find $\sin \alpha$

e) Find $\sin(\alpha + \beta)$

f) In which quadrant is $\alpha + \beta$? Explain.

g) Find $\sin(2\beta)$

h) In which quadrant is $\beta/2$?   Explain.

h) Find $\sin(\beta/2)$.