

## Trig Basics

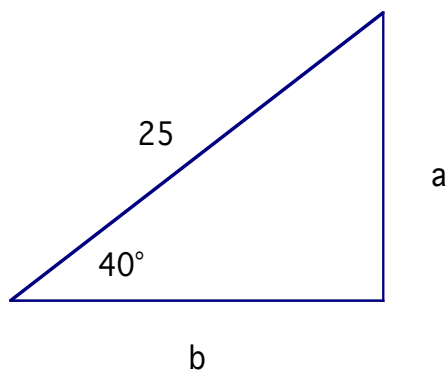
## Part II--CALCULATOR ALLOWED

1.  $\sin(\sec^{-1}\sqrt{2}) =$

- a. 0.50      b. 0.71      c. 0.86      d. 1.414      e. 0.67

2. Which of the following is a unit vector?

- a.
- $-1\vec{i} + \vec{j}$
- b.
- $0\vec{i} - 0\vec{j}$
- c.
- $2\vec{i} - \vec{j}$
- 
- d.
- $\vec{v} = \frac{1}{4}\vec{i} - \frac{3}{4}\vec{j}$
- e.
- $\frac{12}{13}\vec{i} - \frac{5}{13}\vec{j}$

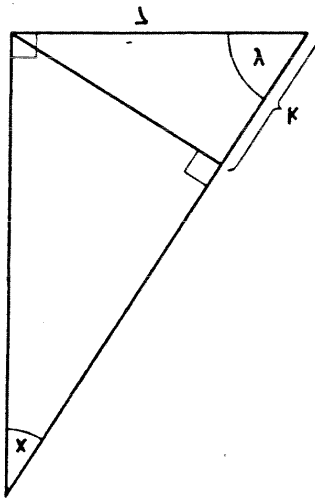
3. In the triangle shown, which of the following best approximates  $b$ ?

- a. 16.07      b. 19.15      c. 20.98
- 
- d. 32.64      e. 38.89

4. . If  $f(x,y) = \tan x + \tan y$  and  $g(x,y) = 1 - \tan x \cdot \tan y$ , then, in radians,  $\frac{f(2, 1)}{g(2, 1)} =$

- a. 0                      b. -0.14                      c. 1.58  
 d. 0.15                      e. -1.56

5. In the figure below,  $\cos y =$



- a.  $\frac{7}{k}$       b.  $\frac{k}{7}$       c.  $\frac{7-k}{7}$       d.  $\frac{\sqrt{49-k^2}}{7}$       e.  $\frac{\sqrt{49-k^2}}{k}$

6. An incline makes an angle of  $30^\circ$  with level ground. How many feet up the incline must one go in order to rise 20 feet above the ground?

- a. 10      b. 20      c.  $20\sqrt{3}$       d. 40      e.  $40\sqrt{3}$

7. What is the measure of an angle whose sine is twice the sine of  $45^\circ$ ?

- a.  $30^\circ$                       b.  $60^\circ$                       c.  $90^\circ$   
 d.  $120^\circ$                       e. No such angle

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## Part III--CALCULATOR ALLOWED

1.  $(4, -5)$  is on the terminal side of  $A$ . Find the six exact trig values:

$$\sin A =$$

$$\csc A =$$

$$\cos A =$$

$$\sec A =$$

$$\tan A =$$

$$\cot A =$$

2. If  $\sin B = \frac{3}{8}$  in QII, find the other five exact trig values:

$$\sin B = \frac{3}{8}$$

$$\csc B =$$

$$\cos B =$$

$$\sec B =$$

$$\tan B =$$

$$\cot B =$$

3. What are the approximate values, in degrees of  $A$  and  $B$  (from #1 and #2)?

$$A = \underline{\hspace{2cm}}$$

$$B = \underline{\hspace{2cm}}$$

4. (a) Find the approximate values of:

$$\cos -38 =$$

$$\sin -246^\circ =$$

$$\tan 5.36 =$$

$$\sec -.347 =$$

$$\csc 5.36^\circ =$$

$$\cot 12 =$$

(b) Find the approximate values (in degrees) of:

$$\cos^{-1} .705 = \left\{ \right.$$

$$\sin^{-1} (-1.345) = \left\{ \right.$$

$$\tan^{-1} 2.758 = \left\{ \right.$$

$$\sec^{-1} 1.982 = \left\{ \right.$$

$$\csc^{-1} -.362 = \left\{ \right.$$

5. A boat sails 53 mph at a bearing of  $213^\circ$ . The current flows 7 mph at  $54^\circ$ . Find the magnitude and bearing of the resultant vector.

6. Identify the quadrant and reference angle of :

a)  $965^\circ$       Q \_\_\_\_\_       $\theta_{ref} =$

b)  $-732^\circ$       Q \_\_\_\_\_       $\theta_{ref} =$

c)  $-1614^\circ$       Q \_\_\_\_\_       $\theta_{ref} =$

d)  $-572^\circ$       Q \_\_\_\_\_       $\theta_{ref} =$

## Trig Basics

## Part I

**NO CALCULATOR ALLOWED**

Round to 3 decimal places. Show all work

1. Fill in the coordinates from QII of the Unit Circle and the Table Values from QI.

	Radians	Degree	Cos	Sin
		0		
		30		
		45		
		60		
		90		

2. Find the exact value of the following:

(a)  $3\sin^2\frac{7\pi}{3} + 2\cos^2\frac{7\pi}{4}$

(b)  $\sec\frac{\pi}{6}\tan\frac{\pi}{3} + \cot\frac{\pi}{3}\csc\frac{\pi}{6}$

(c)  $\sin^2\left(\frac{5\pi}{4}\right) - \cos^2\left(\frac{3\pi}{2}\right) + \tan\left(\frac{4\pi}{3}\right)$