



4. Solve the triangle:  $A = 60^\circ$ ,  $b = 10$ ,  $c = 12$ .

5. Suppose that  $\sec x = \frac{4}{3}$  and that  $x$  is in Quadrant IV.

(a) Find all other trig values of  $x$ .

(b) Find all trig values of  $2x$ .

6. Verify the identity:  $\frac{\sec x}{\tan x} - \frac{\tan x}{\sec x} = \cos x \cot x$

7. Find the exact value of  $\sin(x - y)$  given that  $\sin x = -\frac{4}{5}$  and  $\cos y = \frac{12}{13}$  with  $x$  in Quadrant III and  $y$  in Quadrant IV.

8. Find  $\cos(285^\circ)$  by using an Addition or Subtraction Formula.

9. Use a Sum-to-Product Formula to evaluate  $\sin 285^\circ - \sin 15^\circ$ .

10. Evaluate the following.

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

(b)  $\sin^{-1}\left(\sin\left(\frac{7\pi}{6}\right)\right)$

(c)  $\csc\left(2 \tan^{-1} \frac{1}{2}\right)$

11. (a) Find all solutions to the equation  $\sin^2 x = \frac{\sqrt{3}}{4} + \frac{1}{2}$ .

(b) Find those solutions that are in the interval  $[0, 2\pi)$ .

12. Let  $\mathbf{u} = \langle 3, -5 \rangle$  and  $\mathbf{v} = \langle 7, 2 \rangle$ . Calculate the following.

(a)  $\mathbf{u} + \mathbf{v}$

(b)  $|\mathbf{v} - 2\mathbf{u}|$

(c)  $\mathbf{u} \cdot \mathbf{v}$

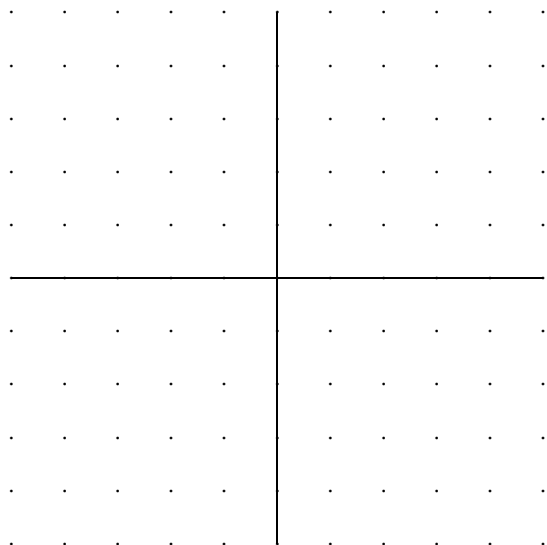
(d) The angle between  $\mathbf{u}$  and  $\mathbf{v}$

(e) The component of  $\mathbf{u}$  along  $\mathbf{v}$

(f)  $\text{proj}_{\mathbf{v}}\mathbf{u}$

13. A plane is traveling at a speed of 400 mi/hr in a direction of  $120^\circ$  relative to the wind. The wind is blowing due east at 20 mi/hr. Find the true velocity of the plane.
14. A constant force  $\mathbf{F} = 5\mathbf{i} + 6\mathbf{j}$  moves an object from the point  $(1, 1)$  to the point  $(4, 7)$ . Find the work done.
15. Sketch the graph of the solution set to the following system of inequalities. Then find the coordinates of all vertices of the solution set.

$$\begin{cases} y > x - 1 \\ y \leq x + 1 \\ x^2 + y^2 \leq 25 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



The following topics may or may not have been covered by your instructor.

16. Rewrite  $-\sin x - \sqrt{3} \cos x$  as an expression of the form  $k \sin(x + \phi)$ .

17. If  $\tan x = -\frac{\sqrt{7}}{3}$  and  $270^\circ < x < 360^\circ$ , find  $\sin \frac{x}{2}$ ,  $\cos \frac{x}{2}$ , and  $\tan \frac{x}{2}$ .