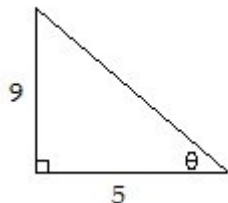


### Chapter 8 and 9 Spiral Test Review

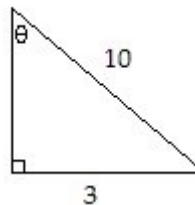
**ALL PROBLEMS MUST BE COMPLETED ON SEPARATE PAPER OTHERWISE; THIS REVIEW SHEET WILL NOT BE GRADED. SHOW ALL WORK FOR CREDIT. REVIEW IS DUE ON TEST DAY.**

**Find the value of the six trigonometric function of the angle  $\theta$  in the figure. Give an exact answer with a rational denominator.**

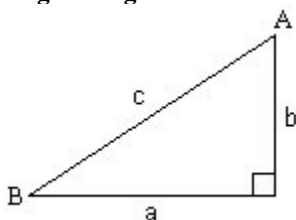
1) Find  $\sin \theta$ .



2) Find  $\cos \theta$ .



**Solve the right triangle using the information given. Round answers to two decimal places, if necessary.**



3)  $a = 5, c = 6$ ; Find  $b, A,$  and  $B$ .

**Solve the problem.**

4) A photographer points a camera at a window in a nearby building forming an angle of  $42^\circ$  with the camera platform. If the camera is 52 m from the building, how high above the platform is the window, to the nearest hundredth of a meter?

5) A twenty-five foot ladder just reaches the top of a house and forms an angle of  $41.5^\circ$  with the wall of the house. How tall is the house? Round your answer to the nearest 0.1 foot.

**Solve the triangle.**

6)  $B = 10^\circ, C = 50^\circ, a = 5$

**Two sides and an angle are given. Determine whether the given information results in one triangle, two triangles, or no triangle at all. Solve any triangle(s) that results.**

7)  $a = 5, b = 4, B = 15^\circ$

8)  $A = 30^\circ, a = 21, b = 42$

**Solve the problem.**

9) To find the distance AB across a river, a distance BC of 956 m is laid off on one side of the river. It is found that  $B = 106.8^\circ$  and  $C = 15.6^\circ$ . Find AB. Round to the nearest meter.

**Solve the triangle.**

10)  $a = 6, b = 14, c = 16$

**Solve the problem.**

11) Two points A and B are on opposite sides of a building. A surveyor selects a third point C to place a transit. Point C is 46 feet from point A and 73 feet from point B. The angle ACB is  $49^\circ$ . How far apart are points A and B?

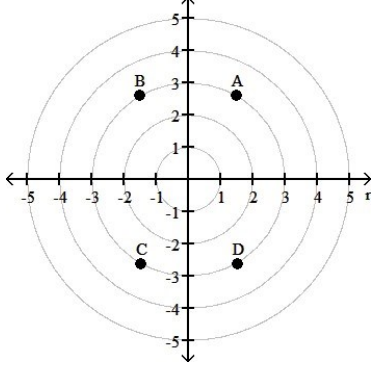
**Find the area of the triangle. If necessary, round the answer to two decimal places.**

12)  $A = 83^\circ, b = 9, c = 6$

13)  $a = 12, b = 14, c = 16$

Match the point in polar coordinates with either A, B, C, or D on the graph.

14.  $(-3, \frac{7\pi}{3})$       15)  $(-3, \frac{4\pi}{3})$



Plot the point given in polar coordinates.

16)  $(2, -\frac{\pi}{4})$

17) Plot the point  $(4, \frac{5\pi}{6})$  and find other polar coordinates  $(r, \theta)$  of the point for which:

(a)  $r > 0, -2\pi \leq \theta < 0$

(b)  $r < 0, 0 \leq \theta < 2\pi$

(c)  $r > 0, 2\pi \leq \theta < 4\pi$

18) Plot the point  $(3, \frac{3\pi}{4})$  and find other polar coordinates  $(r, \theta)$  of the point for which:

(a)  $r > 0, -2\pi \leq \theta < 0$

(b)  $r < 0, -2\pi \leq \theta < 0$

(c)  $r > 0, 2\pi \leq \theta < 4\pi$

The polar coordinates of a point are given. Find the rectangular coordinates of the point.

19)  $(-9, \frac{2\pi}{3})$

The rectangular coordinates of a point are given. Find polar coordinates for the point.

20)  $(-3, 0)$

21)  $(3, -3)$

The letters  $x$  and  $y$  represent rectangular coordinates. Write the equation using polar coordinates  $(r, \theta)$ .

22)  $x^2 = 4y$

23)  $x^2 + y^2 + 3y = 0$

The letters  $r$  and  $\theta$  represent polar coordinates. Write the equation using rectangular coordinates  $(x, y)$ .

24)  $r = 2(\sin \theta - \cos \theta)$

25. A)  $r \sin \theta = 10$     25. B.)  $r = 6\cos \theta$

Identify and graph the polar equation.

26)  $r = 1 + \sin \theta$

28)  $r = 4 - 5 \cos \theta$

31)  $r^2 = 9 \cos(2\theta)$

27)  $r = 5 - 4 \sin \theta$

no problem 29 or 30!

32)  $r = 2\cos(2\theta)$

The vector  $v$  has initial position  $P$  and terminal point  $Q$ . Write  $v$  in the form  $a\mathbf{i} + b\mathbf{j}$ ; that is, find its position vector.

33)  $P = (-6, 1); Q = (4, -4)$

Solve the problem.

34) If  $\mathbf{u} = 2\mathbf{i} - 5\mathbf{j}$  and  $\mathbf{v} = 4\mathbf{i} + 9\mathbf{j}$ , find  $\mathbf{u} + \mathbf{v}$ .

35) If  $\mathbf{w} = 8\mathbf{i} + 4\mathbf{j}$ , find  $2\mathbf{w}$ .

36) If  $\mathbf{v} = 6\mathbf{i} + 8\mathbf{j}$ ,

find  $\|\mathbf{v}\|$ .

Write the vector  $v$  in the form  $a\mathbf{i} + b\mathbf{j}$ , given its magnitude  $\|\mathbf{v}\|$  and the angle  $\alpha$  it makes with the positive  $x$ -axis.

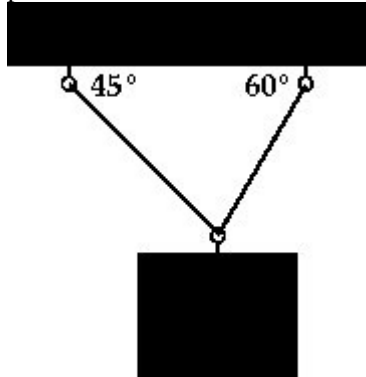
37)  $\|\mathbf{v}\| = 3, \alpha = 60^\circ$

Find the direction angle of the vector  $v$ . Round to the nearest tenth if necessary.

38)  $\mathbf{v} = -4\mathbf{i} + 4\mathbf{j}$

**Solve the problem.**

39) A box of supplies that weighs 1750 kilograms is suspended by two cables as shown in the figure. To two decimal places, what is the tension in the two cables?



**Find the dot product  $v \cdot w$ .**

40)  $v = 7i - 4j$ ,  $w = 8i + j$

**Find the angle between  $v$  and  $w$ . Round your answer to one decimal place, if necessary.**

41)  $v = 8i + 6j$ ,  $w = 4i + 9j$

**State whether the vectors are parallel, orthogonal, or neither.**

42)  $v = 3i + j$ ,  $w = i - 3j$

**Solve the problem. Round your answer to the nearest tenth.**

43) A person is pulling a freight cart with a force of 49 pounds. How much work is done in moving the cart 100 feet if the cart's handle makes an angle of  $21^\circ$  with the ground?