1 If the angle 15 ° is in standard position, find two positive coterminal angles and two negative coterminal angles.

a. 375°, 735°, -345°, -705°

b. 285°, 555°, -255°, -525°

c. 195°, 375°, -165°, -345°

d. 105°, 195°, -75°, -165°

5 Find the quadrant containing θ if the given conditions are true.
$\csc\theta > 0$ and $\sec\theta < 0$

a. III

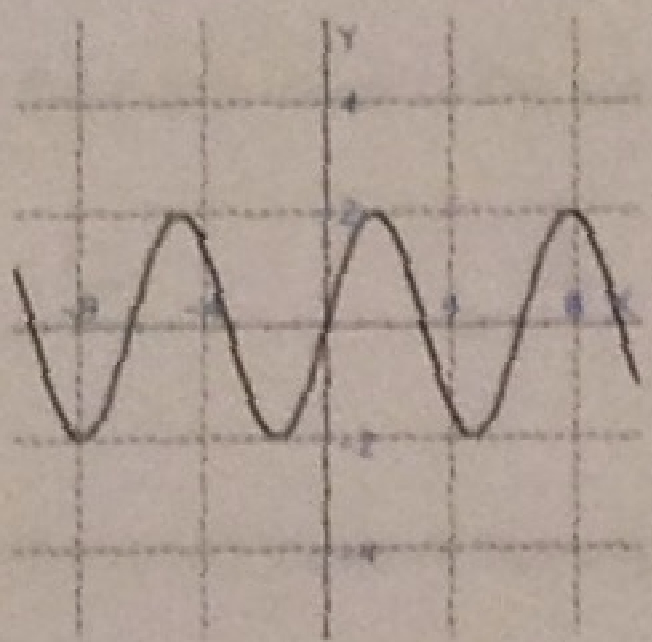
b. IV

c. I

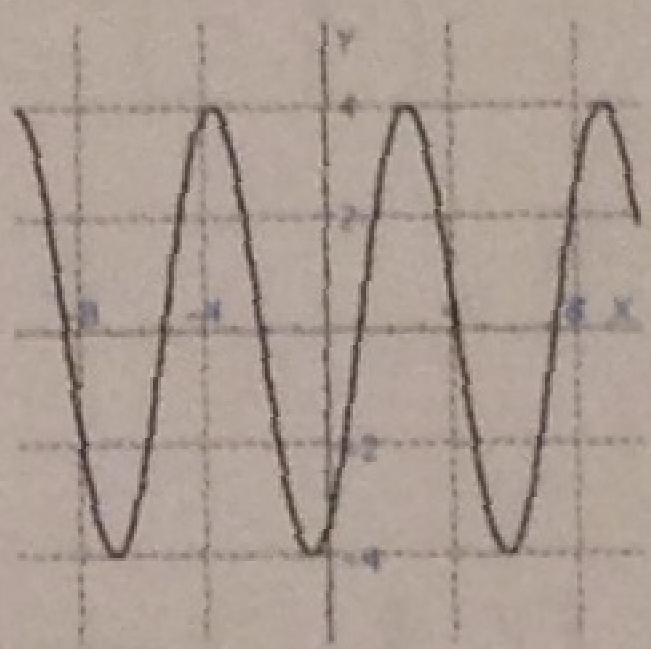
d. II

11 Sketch the graph of the equation. $y = 4\sin\left(x - \frac{\pi}{3}\right)$

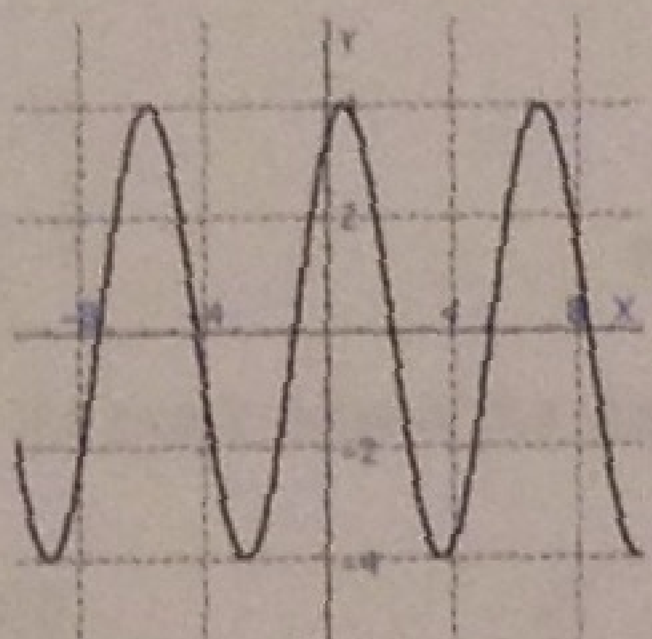
a.



b.



c.



13 Find the exact value. $\tan 45^\circ + \tan 210^\circ$

a. $1 + \frac{1}{\sqrt{3}}$

b. $\frac{1 + \frac{1}{\sqrt{3}}}{2}$

c. 1

d. $1 + \frac{2}{\sqrt{3}}$

16 If $\tan\alpha = -\frac{7}{24}$ and $\cot\beta = \frac{3}{4}$ for a second-quadrant angle α and a third-quadrant angle β, find

$$\cos(\alpha - \beta)$$

a. $\frac{44}{125}$

b. $-\frac{13}{44}$

c. $\frac{13}{125}$

d. $-\frac{4}{13}$

21 Express as a sum or difference. $2\sin 7\theta \cos 4\theta$

a. $\cos(11\theta) + \cos(3\theta)$

b. $\frac{1}{2}\sin(11\theta) + \frac{1}{2}\sin(3\theta)$

c. $\cos(10\theta) + \cos(4\theta)$

d. $\sin(11\theta) + \sin(3\theta)$

25 Find the exact value of the expression. $\cos^{-1}\left(-\frac{1}{2}\right)$

a. $-\frac{2\pi}{5}$

b. $\frac{2\pi}{5}$

c. $-\frac{2\pi}{3}$

d. $\frac{2\pi}{3}$

27 Find the exact value of the expression.

$$\sin\left[\arcsin\left(-\frac{3}{10}\right)\right]$$

a. $-\frac{3}{8}$

b. $-\frac{7}{8}$

c. $-\frac{3}{10}$

30 Find the exact value of the expression. $\sin\left[\cos^{-1}\left(-\frac{2}{3}\right)\right]$

a. $\frac{\sqrt{10}}{3}$

b. $\frac{\sqrt{5}}{3}$

c. $\frac{\sqrt{13}}{3}$

d. $\frac{\sqrt{11}}{3}$

31 Complete the statement. As $x \to 1^-$, $\cos^{-1}x \to$ __

a. $-\frac{\pi}{2}$

b. 0

c. $-\frac{\pi}{6}$

35 Solve Δ ABC. $\gamma = 85^{\circ}$, $c = 11$, $b = 12$

a. no triangle exists

b. $\alpha = 38^{\circ}$, $\beta = 57^{\circ}$, $a = 10$

c. $\alpha = 40^{\circ}$, $\beta = 55^{\circ}$, $a = 10$

d. $\alpha = 40^{\circ}$, $\beta = 55^{\circ}$, $a = 8$

40 Find 3 **a** + 5 **b**. **a** = (6, - 2), **b** = (3, 3)

a. 3a + 5b = (33, 9)

b. 3a + 5b = (39, 12)

c. 3a + 5b = (27, 15)

d. 3a + 5b = (15, 15)

41 Find || **a** ||. **a** = - (5, - 2)

a. $\|a\| = \sqrt{26}$ b. $\|a\| = \sqrt{29}$ c. $\|a\| = \sqrt{30}$ d. $\|a\| = \sqrt{27}$

45 Find a unit vector that has the same direction as the vector **a**. **a** = (0, 3)

a. (1, 0)

b. (1, 1)

c. (0, 1)

d. (0, - 3)

46 Find a vector that has the opposite direction of 6 **i** - 2 **j** and two times the magnitude.

a. $-12\mathbf{i} + 4\mathbf{j}$

b. $-10\mathbf{i} + 2\mathbf{j}$

c. $-15\mathbf{i} + 7\mathbf{j}$

d. $-13\mathbf{i} + 5\mathbf{j}$

48 Find the dot product of the two vectors 4 **i** and 2 **i** + 10 **j**.

a. 8

b. 24

c. 18

d. 0

49 Given that $\mathbf{a} = \langle 5, -3 \rangle$, $\mathbf{b} = \langle 1, 4 \rangle$, and $\mathbf{c} = \langle -1, 3 \rangle$, find the number

$\mathbf{a} \cdot (\mathbf{b} + \mathbf{c})$.

a. 21

b. -11

c. 31

d. -21

51 Find the absolute value $|9i|$

a. 9

b. $-i$

c. - 9

d. i

52 Express the complex number in trigonometric form with $0 \le \theta \le 2\pi$.

$9\sqrt{3} + 9i$

a. $9 \operatorname{cis} \frac{\pi}{3}$

b. $18 \operatorname{cis} \frac{7\pi}{6}$

c. $-18 \operatorname{cis} \frac{\pi}{6}$

d. $18 \operatorname{cis} \frac{\pi}{6}$

56 Express in the form a + bi, where a and b are real numbers.
$7(\cos \pi + i \sin \pi)$

a. $7i$
b. $-7 + 0i$
c. $-7i$
d. $7 + 0i$

59 Use De Moivre's theorem to change the given complex number to the form a + bi, where a and b are real numbers.
$(-1 + i)\ 24$

a. $-4096i$
b. 4096
c. $-2048i$
d. 2048

63 Find the solutions of the equation. $x^4 - 625 = 0$

a. $10i,\ -10i$
b. $10,\ -10,\ 10i,\ -10i$
c. $5,\ -5,\ 5i,\ -5i$
d. $5,\ -5$

64 Find the focus of the parabola. $4y = x^2$

a. $F(2,1)$
b. $F(0,4)$
c. $F(0,1)$
d. $F(1,1)$

66 Find an equation of the parabola that satisfies the condition. Focus F (8, 0), directrix x = - 4

a. $y^2 = 24(x + 2)$
b. $y^2 = 24(x - 2)$
c. $x^2 = 24(y - 2)$
d. $y^2 = (x - 2)$

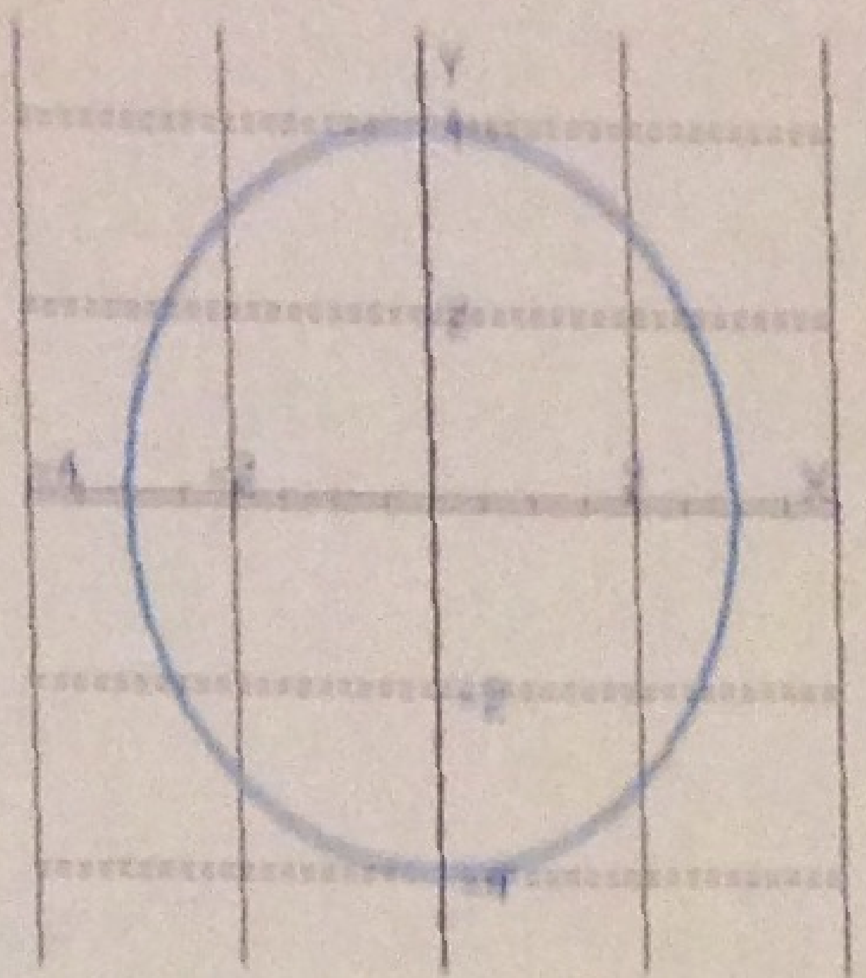
69 Find the one of the foci of the ellipse $\frac{x^2}{49} + \frac{y^2}{9} = 1.$

a. $(\sqrt{40}, 0)$
b. $(\sqrt{58}, 0)$
c. $(0, -\sqrt{58})$
d. $(0, \sqrt{40})$

71 Find a vertex of the ellipse $\frac{(x-4)^2}{16} + \frac{(y-4)^2}{9} = 1.$

a. $(8, -4)$
b. $(0, -4)$
c. $(0, 4)$
d. $(8, 4)$

72 Find an equation for the ellipse shown in the figure.



a. $\frac{x^2}{8} + \frac{y^2}{6} = 1$

b. $\frac{x^2}{6} + \frac{y^2}{8} = 1$

c. $\frac{x^2}{16} + \frac{y^2}{9} = 1$

d. $\frac{x^2}{9} + \frac{y^2}{16} = 1$

77 Identify the graph of the equation as a parabola (with vertical or horizontal axis), circle, ellipse, or hyperbola

$$-x^2 = y^2 - 25$$

a. Ellipse

b. Parabola with vertical axis

c. Circle

78 Use the graph of f to find the simplest expression $g(x)$ such that the equation $f(x) = g(x)$ is an identity. Verify the identity.

$$f(x) = \frac{\sin^2 x - \sin^4 x}{\left(1 - \sec^2 x\right)\cos^4 x}$$

a. $g(x) = \cos x$

b. $g(x) = 1$

c. $g(x) = \sin x$

d. $g(x) = \tan x$

e. $g(x) = -1$

81 Complete the identity selecting its right side from five expressions given in the choices.

$$\cot^2 4\alpha - \cos^2 4\alpha =$$

a. $2\csc^2 4\alpha$

b. $\csc^2 4\alpha + \cot^2 4\alpha$

c. $\cot^2 4\alpha + \cos^2 4\alpha$

d. $\cot^2 4\alpha \cos^2 4\alpha$

e. $\cos^2 8\alpha$