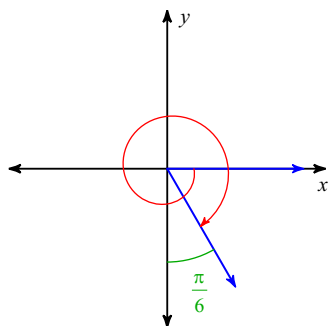


## Final Exam Review

**Find the measure of each angle.**

1)



A)  $-\frac{85\pi}{36}$

B)  $\frac{13\pi}{3}$

C)  $-\frac{7\pi}{3}$

D)  $-\frac{23\pi}{6}$

**State the quadrant in which the terminal side of each angle lies.**

2)  $395^\circ$

A) II

B) III

C) I

D) IV

3)  $\frac{13\pi}{4}$

A) I

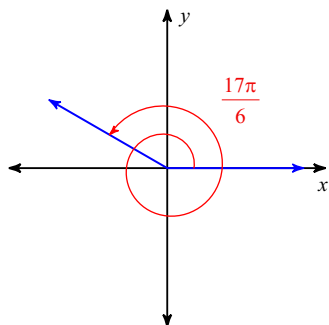
B) IV

C) II

D) III

**Find the reference angle.**

4)



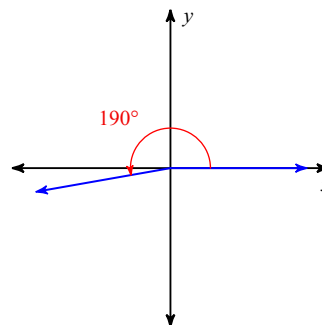
A)  $\frac{\pi}{6}$

B)  $\frac{2\pi}{9}$

C)  $\frac{\pi}{3}$

D)  $\frac{\pi}{18}$

5)



A)  $70^\circ$

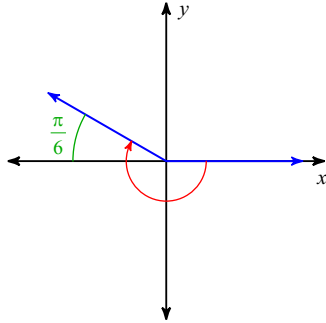
B)  $65^\circ$

C)  $10^\circ$

D)  $80^\circ$

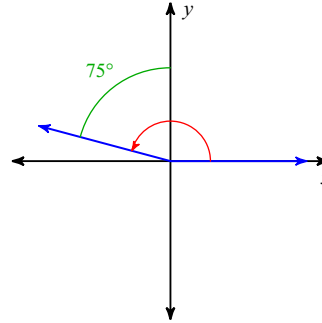
Find the measure of each angle.

6)



- A)  $-\frac{7\pi}{6}$       B)  $-\frac{2\pi}{3}$   
 C)  $\frac{5\pi}{6}$         D)  $-\frac{43\pi}{36}$

7)



- A)  $150^\circ$       B)  $145^\circ$   
 C)  $195^\circ$       D)  $165^\circ$

Convert each degree measure into radians or radian measure into degrees.

8)  $135^\circ$

- A)  $\frac{13\pi}{18}$       B)  $\frac{11\pi}{18}$   
 C)  $\frac{7\pi}{9}$         D)  $\frac{3\pi}{4}$

9)  $-\frac{7\pi}{4}$

- A)  $-315^\circ$       B)  $-310^\circ$   
 C)  $-320^\circ$       D)  $-305^\circ$

Convert each decimal degree measure into degrees-minutes-seconds.

10)  $47.455^\circ$

- A)  $47^\circ 31' 30''$       B)  $47^\circ 22' 39''$   
 C)  $47^\circ 27' 18''$       D)  $47^\circ 10' 3''$

Convert each degrees-minutes-seconds into decimal degrees.

11)  $0^\circ 40' 3''$

- A)  $0.6025^\circ$       B)  $0.6175^\circ$   
 C)  $0.6675^\circ$       D)  $0.6075^\circ$

Find a positive and a negative coterminal angle for each given angle.

12)  $\frac{7\pi}{12}$

- A)  $\frac{31\pi}{12}$  and  $-\frac{17\pi}{12}$   
 B)  $\frac{25\pi}{12}$  and  $-\frac{5\pi}{12}$   
 C)  $\frac{43\pi}{12}$  and  $-\frac{5\pi}{12}$   
 D)  $\frac{31\pi}{12}$  and  $-\frac{23\pi}{12}$

State if the given angles are coterminal.

13)  $\frac{17\pi}{36}, \frac{89\pi}{36}$

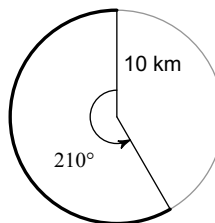
- A) No      B) Yes

Find the length of each arc.

14)  $r = 15 \text{ mi}, \theta = \frac{5\pi}{6}$

- A)  $\frac{136\pi}{3}$  mi      B)  $\frac{375\pi}{4}$  mi  
 C)  $\frac{25\pi}{2}$  mi      D)  $\frac{2\pi}{3}$  mi

15)



- A)  $\frac{27\pi}{2}$  km      B)  $200\pi$  km  
 C)  $\frac{35\pi}{3}$  km      D)  $\frac{39\pi}{2}$  km

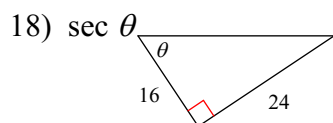
Find the value of the trig function indicated.

16) Find  $\csc \theta$  if  $\cot \theta = \frac{4}{3}$

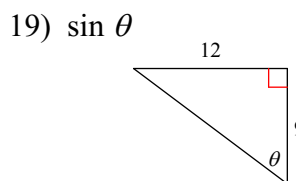
- A)  $\frac{5}{3}$       B)  $\frac{4}{5}$   
 C)  $\frac{5}{4}$       D)  $\frac{3}{4}$

17) Find  $\tan \theta$  if  $\cos \theta = \frac{1}{2}$

- A)  $\frac{1}{2}$       B)  $\sqrt{3}$   
 C)  $\frac{\sqrt{7}}{4}$       D) 2

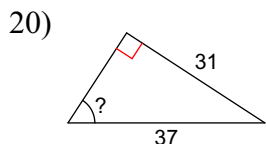


- A)  $\frac{5}{4}$       B)  $\frac{\sqrt{13}}{2}$   
 C)  $\frac{2}{3}$       D)  $\frac{3}{4}$

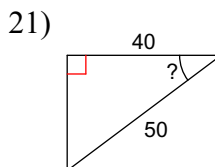


- A)  $\frac{5}{3}$       B)  $\frac{4}{5}$   
 C)  $\frac{3}{4}$       D)  $\frac{3}{5}$

Find the measure of the indicated angle to the nearest degree.



- A)  $21^\circ$       B)  $33^\circ$   
 C)  $57^\circ$       D)  $50^\circ$



- A)  $39^\circ$       B)  $53^\circ$   
 C)  $37^\circ$       D)  $51^\circ$

In each problem, angle C is a right angle. Find the angle indicated to the nearest tenth.

22) Find  $m\angle A$  if  $b = 10$ ,  $a = 6$

- A)  $26.4^\circ$       B)  $31^\circ$   
 C)  $38.9^\circ$       D)  $31.6^\circ$

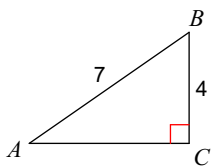
In each problem, angle C is a right angle. Find the side indicated to the nearest tenth.

23) Find  $b$  if  $b = 18.6$ ,  $m\angle A = 37^\circ$

- A) 15              B) 20.5  
 C) 15.5          D) 18.6

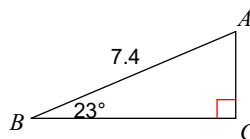
Solve each triangle. Round answers to the nearest tenth.

24)



- A)  $m\angle A = 38^\circ$ ,  $m\angle B = 52^\circ$ ,  $b = 5.7$   
 B)  $m\angle A = 34.8^\circ$ ,  $m\angle B = 55.2^\circ$ ,  $b = 5.7$   
 C)  $m\angle A = 34.3^\circ$ ,  $m\angle B = 55.7^\circ$ ,  $b = 5.7$   
 D)  $m\angle A = 31.9^\circ$ ,  $m\angle B = 58.1^\circ$ ,  $b = 5.7$

25)



- A)  $m\angle A = 67^\circ$ ,  $b = 2.9$ ,  $a = 5.6$   
 B)  $m\angle A = 67^\circ$ ,  $b = 2.9$ ,  $a = 6.8$   
 C)  $m\angle A = 67^\circ$ ,  $b = 2.9$ ,  $a = 6.1$   
 D)  $m\angle A = 67^\circ$ ,  $b = 2.3$ ,  $a = 6.8$

Find the exact value of each trigonometric function.

26)  $\cos -2\pi$

- A) -1              B) 1  
 C) Undefined    D) 0

27)  $\cos 180^\circ$

- A)  $-\frac{\sqrt{3}}{3}$           B)  $-\frac{\sqrt{2}}{2}$   
 C) 0                D) -1

Solve each triangle. Round your answers to the nearest tenth.

28)  $m\angle C = 71^\circ$ ,  $b = 25$ ,  $c = 6$

- A)  $m\angle A = 26^\circ$ ,  $m\angle B = 96^\circ$ ,  $a = 12$   
 B) Not a triangle  
 C)  $m\angle A = 26^\circ$ ,  $m\angle B = 96^\circ$ ,  $a = 15$   
 D)  $m\angle A = 20^\circ$ ,  $m\angle B = 102^\circ$ ,  $a = 15$

29)  $m\angle A = 91^\circ$ ,  $a = 32$ ,  $c = 28$

- A) Not a triangle  
 B)  $m\angle B = 28^\circ$ ,  $m\angle C = 61^\circ$ ,  $b = 15$   
 C)  $m\angle B = 28^\circ$ ,  $m\angle C = 61^\circ$ ,  $b = 12$   
 D)  $m\angle B = 28^\circ$ ,  $m\angle C = 61^\circ$ ,  $b = 18$

30)  $m\angle A = 136^\circ$ ,  $m\angle C = 29^\circ$ ,  $b = 16$

- A)  $m\angle B = 15^\circ$ ,  $c = 30$ ,  $a = 42$   
 B) Not a triangle  
 C)  $m\angle B = 15^\circ$ ,  $c = 30$ ,  $a = 40.1$   
 D)  $m\angle B = 15^\circ$ ,  $c = 30$ ,  $a = 42.9$

31)  $b = 19.1$  yd,  $a = 18.5$  yd,  $m\angle C = 105.3^\circ$

- A)  $m\angle A = 36.7^\circ$ ,  $m\angle B = 38^\circ$ ,  $c = 33.5$  yd  
 B)  $m\angle A = 28.9^\circ$ ,  $m\angle B = 45.8^\circ$ ,  $c = 29.9$  yd  
 C)  $m\angle A = 36.7^\circ$ ,  $m\angle B = 38^\circ$ ,  $c = 26.5$  yd  
 D)  $m\angle A = 36.7^\circ$ ,  $m\angle B = 38^\circ$ ,  $c = 29.9$  yd

32)  $c = 17$  km,  $m\angle A = 106^\circ$ ,  $b = 10$  km

- A)  $m\angle B = 24^\circ$ ,  $m\angle C = 50^\circ$ ,  $a = 22$  km  
 B)  $m\angle B = 23^\circ$ ,  $m\angle C = 51^\circ$ ,  $a = 30$  km  
 C)  $m\angle B = 23^\circ$ ,  $m\angle C = 51^\circ$ ,  $a = 23$  km  
 D)  $m\angle B = 26^\circ$ ,  $m\angle C = 48^\circ$ ,  $a = 22$  km

33)  $b = 7$  m,  $a = 27$  m,  $c = 26$  m

- A)  $m\angle B = 16.4^\circ$ ,  $m\angle C = 80.1^\circ$ ,  $m\angle A = 83.5^\circ$   
 B)  $m\angle B = 16.4^\circ$ ,  $m\angle C = 60.3^\circ$ ,  $m\angle A = 103.3^\circ$   
 C)  $m\angle B = 15.1^\circ$ ,  $m\angle C = 74.3^\circ$ ,  $m\angle A = 90.6^\circ$   
 D)  $m\angle B = 18.4^\circ$ ,  $m\angle C = 65.1^\circ$ ,  $m\angle A = 96.5^\circ$

**Find the area of each triangle to the nearest tenth.**

34) In  $\triangle CAB$ ,  $b = 15$ ,  $a = 7$ ,  $c = 13.7$

- A) 47.1 units<sup>2</sup>      B) 51.9 units<sup>2</sup>  
 C) 41.3 units<sup>2</sup>      D) 47.9 units<sup>2</sup>

35)  $m\angle A = 135^\circ$ ,  $a = 7$  cm,  $m\angle B = 26^\circ$

- A) 6.9 cm<sup>2</sup>      B) 4.9 cm<sup>2</sup>  
 C) 4.1 cm<sup>2</sup>      D) 5.6 cm<sup>2</sup>

36)  $c = 4$  cm,  $m\angle B = 126^\circ$ ,  $m\angle A = 39^\circ$

- A) 17.4 cm<sup>2</sup>      B) 15.7 cm<sup>2</sup>  
 C) 15.1 cm<sup>2</sup>      D) 14 cm<sup>2</sup>

**Find the amplitude of each function.**

37)  $y = 7\tan \theta + 3$

- A) 9      B) None  
 C) 10      D)  $\frac{1}{4}$

38)  $y = 8\sin\left(\theta + \frac{3\pi}{4}\right) + 4$

- A)  $\frac{1}{5}$       B)  $\frac{1}{7}$   
 C) 8      D) None

**Using radians, find the period of each function.**

39)  $y = \frac{1}{9} \cdot \tan \frac{\theta}{8} - 4$

- A)  $8\pi$       B)  $\frac{\pi}{8}$   
 C)  $\frac{\pi}{2}$       D)  $16\pi$

40)  $y = 6\sec\left(2\theta + \frac{2\pi}{3}\right) - 3$

- A)  $4\pi$       B)  $\pi$   
 C)  $14\pi$       D)  $12\pi$

**Use the angle sum or difference identity to find the exact value of each.**

41)  $\cos 285^\circ$

- A)  $\frac{\sqrt{2} - \sqrt{6}}{4}$       B)  $\frac{-\sqrt{6} - \sqrt{2}}{4}$   
 C)  $\frac{\sqrt{6} + \sqrt{2}}{4}$       D)  $\frac{\sqrt{6} - \sqrt{2}}{4}$

42)  $\cos -15^\circ$

- A)  $\frac{\sqrt{6} + \sqrt{2}}{4}$       B)  $\frac{\sqrt{6} - \sqrt{2}}{4}$   
 C)  $\frac{\sqrt{2} - \sqrt{6}}{4}$       D)  $\frac{-\sqrt{6} - \sqrt{2}}{4}$

**Use a double-angle or half-angle identity to find the exact value of each expression.**

43)  $\tan 105^\circ$

- A)  $-\sqrt{2}$       B)  $-2 - \sqrt{3}$   
 C)  $-\sqrt{4 - 2\sqrt{2}}$       D)  $\sqrt{2} - \sqrt{6}$

44)  $\cos 67\frac{1}{2}^\circ$

A)  $\sqrt{6} + \sqrt{2}$

B)  $\frac{\sqrt{2 - \sqrt{2}}}{2}$

C)  $\sqrt{3 + 2\sqrt{2}}$

D)  $\sqrt{3} - 2$

Solve each equation for  $0 \leq \theta < 2\pi$ .

45)  $6\tan \theta = -2\sqrt{3}$

A)  $\left\{\frac{\pi}{4}, \frac{5\pi}{6}, \frac{5\pi}{4}\right\}$

B)  $\left\{\frac{5\pi}{6}\right\}$

C)  $\left\{\frac{5\pi}{6}, \frac{11\pi}{6}\right\}$

D)  $\left\{\frac{\pi}{4}, \frac{11\pi}{6}\right\}$

46)  $-5 = -5 + 2\cos \theta$

A)  $\left\{\frac{7\pi}{6}, \frac{3\pi}{2}\right\}$

B)  $\left\{\frac{\pi}{2}, \frac{3\pi}{2}\right\}$

C)  $\left\{\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}\right\}$

D)  $\left\{\frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}\right\}$

Simplify. Write "undefined" for expressions that are undefined.

47)  $\begin{bmatrix} -3 & -1 \\ 2 & 6 \\ 5 & 5 \end{bmatrix} + \begin{bmatrix} -1 & 2 \\ 5 & 0 \\ -2 & -3 \end{bmatrix}$

A)  $\begin{bmatrix} -4 & 1 \\ 7 & -6 \\ 3 & 8 \end{bmatrix}$

B)  $\begin{bmatrix} -4 & 1 \\ 7 & 6 \\ 3 & 2 \end{bmatrix}$

C)  $\begin{bmatrix} -4 & 1 \\ 7 & 6 \\ 3 & -8 \end{bmatrix}$

D)  $\begin{bmatrix} -4 & 1 \\ 5 & 6 \\ 3 & 2 \end{bmatrix}$

48)  $\begin{bmatrix} 1 & -4 & 0 \\ -4 & 4 & 1 \end{bmatrix} - \begin{bmatrix} -6 & 4 & -2 \\ -1 & 5 & -5 \end{bmatrix}$

A)  $\begin{bmatrix} -5 & -8 & 2 \\ -3 & 9 & 6 \end{bmatrix}$

B)  $\begin{bmatrix} -5 & 1 & -2 \\ -5 & 9 & -1 \end{bmatrix}$

C)  $\begin{bmatrix} -7 & -8 & 2 \\ -3 & -1 & 6 \end{bmatrix}$

D)  $\begin{bmatrix} 7 & -8 & 2 \\ -3 & -1 & 6 \end{bmatrix}$

49)  $\begin{bmatrix} 2 & 2 \\ 6 & 5 \end{bmatrix} \cdot \begin{bmatrix} -5 & -5 \\ -5 & 1 \\ -5 & 5 \end{bmatrix}$

A) Undefined

B)  $\begin{bmatrix} 2 & 15 \\ 6 & 2 \end{bmatrix}$

C)  $\begin{bmatrix} 2 & 6 \\ 2 & 2 \end{bmatrix}$

D)  $\begin{bmatrix} 6 & 6 \\ 2 & 5 \end{bmatrix}$

50)  $\begin{bmatrix} -5 & 1 & 0 \\ -4 & -6 & -2 \end{bmatrix} \cdot \begin{bmatrix} 1 & 3 \\ -3 & 6 \\ -6 & 4 \end{bmatrix}$

A)  $\begin{bmatrix} -8 & -9 \\ 26 & -56 \end{bmatrix}$

B)  $\begin{bmatrix} 2 & 21 \\ 26 & -56 \end{bmatrix}$

C)  $\begin{bmatrix} -2 & -9 \\ -10 & -56 \end{bmatrix}$

D)  $\begin{bmatrix} -8 & 21 \\ 26 & -32 \end{bmatrix}$

Evaluate each determinant.

$$51) \begin{vmatrix} -5 & -1 \\ 3 & -1 \end{vmatrix}$$

- A) 2            B) 3  
C) 8            D) -2

$$52) \begin{vmatrix} 2 & 3 & -4 \\ 0 & 0 & 1 \\ 5 & -5 & 1 \end{vmatrix}$$

- A) -85            B) 425  
C) -25            D) 25

Find the inverse of each matrix.

$$53) \begin{bmatrix} 8 & 1 \\ 6 & 1 \end{bmatrix}$$

- A)  $\begin{bmatrix} -\frac{1}{47} & \frac{6}{47} \\ \frac{8}{47} & -\frac{1}{47} \end{bmatrix}$   
B) No inverse exists  
C)  $\begin{bmatrix} 4 & -3 \\ -\frac{1}{2} & \frac{1}{2} \end{bmatrix}$   
D)  $\begin{bmatrix} \frac{1}{2} & -\frac{1}{2} \\ -3 & 4 \end{bmatrix}$

$$54) \begin{bmatrix} 0 & -7 \\ 1 & 4 \end{bmatrix}$$

- A)  $\begin{bmatrix} \frac{4}{7} & 1 \\ -\frac{1}{7} & 0 \end{bmatrix}$             B)  $\begin{bmatrix} 1 & \frac{7}{4} \\ 0 & \frac{1}{4} \end{bmatrix}$   
C)  $\begin{bmatrix} \frac{7}{4} & 1 \\ \frac{1}{4} & 0 \end{bmatrix}$             D)  $\begin{bmatrix} \frac{1}{28} & -\frac{1}{7} \\ \frac{1}{4} & 0 \end{bmatrix}$

Solve each equation or state if there is no unique solution.

$$55) \begin{bmatrix} 6 & -6 \\ -18 & -2 \end{bmatrix} = \begin{bmatrix} -2 & 2 \\ 10 & -6 \end{bmatrix} X$$

- A)  $\begin{bmatrix} 0 & -5 \\ 3 & -8 \end{bmatrix}$             B)  $\begin{bmatrix} -5 & 0 \\ 3 & -8 \end{bmatrix}$   
C)  $\begin{bmatrix} 0 & 3 \\ -4 & -8 \end{bmatrix}$             D)  $\begin{bmatrix} 3 & -5 \\ 0 & -8 \end{bmatrix}$

$$56) \begin{bmatrix} 3 & 6 \\ 2 & 1 \end{bmatrix} Z - \begin{bmatrix} 5 \\ -6 \end{bmatrix} = \begin{bmatrix} 22 \\ 9 \end{bmatrix}$$

- A)  $\begin{bmatrix} 5 \\ -1 \end{bmatrix}$             B)  $\begin{bmatrix} 0 \\ 5 \end{bmatrix}$   
C)  $\begin{bmatrix} -3 \\ 5 \end{bmatrix}$             D)  $\begin{bmatrix} -1 \\ 5 \end{bmatrix}$

Identify the vertex of each.

$$57) \frac{1}{2}(y - 6) = (x - 2)^2$$

- A) (2, 6)            B) (-2, 6)  
C) (6, -2)            D) (-6, 2)

Identify the focus of each.

$$58) 4(x + 2) = (y - 5)^2$$

- A) (2, 4)            B) (-1, 5)  
C) (-5, 3)            D) (6, 2)

Use the information provided to write the transformational form equation of each parabola.

59) Vertex:  $(-5, -9)$ , Focus:  $(-\frac{81}{16}, -9)$

A)  $-\frac{1}{4}(x+5) = (y+9)^2$

B)  $-\frac{1}{4}(x-7) = (y+7)^2$

C)  $\frac{1}{4}(y+11) = (x+7)^2$

D)  $\frac{1}{2}(x-9) = (y-5)^2$

60)  $y^2 + x + 4y - 1 = 0$

A)  $-(x-5) = (y+2)^2$

B)  $x-2 = (y-5)^2$

C)  $y+2 = (x-5)^2$

D)  $-(x-5) = (y-2)^2$

Identify the center and radius of each.

61)  $(x-12)^2 + (y-9)^2 = 21$

A) Center:  $(12, 9)$

Radius: 21

B) Center:  $(-9, 12)$

Radius: 21

C) Center:  $(12, 9)$

Radius:  $\sqrt{21}$

D) Center:  $(-13, -8)$

Radius:  $\sqrt{21}$

62)  $x^2 + y^2 - 30x - 26y + 387 = 0$

A) Center:  $(15, 13)$

Radius: 1

B) Center:  $(-13, 15)$

Radius:  $\sqrt{7}$

C) Center:  $(15, 13)$

Radius:  $\sqrt{7}$

D) Center:  $(15, -16)$

Radius:  $\sqrt{7}$

Identify the foci of each.

63)  $\frac{(x-3)^2}{49} + \frac{y^2}{16} = 1$

A)  $(3 + \sqrt{33}, 0), (3 - \sqrt{33}, 0)$

B)  $(-2 + \sqrt{33}, 2), (-2 - \sqrt{33}, 2)$

C)  $(-3 + \sqrt{33}, 0), (-3 - \sqrt{33}, 0)$

D)  $(3, \sqrt{33}), (3, -\sqrt{33})$

Identify the center of each.

64)  $16x^2 + 4y^2 + 208x + 36y + 613 = 0$

A)  $(\frac{11}{2}, \frac{13}{2})$

B)  $(-\frac{13}{2}, \frac{9}{2})$

C)  $(\frac{9}{2}, \frac{13}{2})$

D)  $(-\frac{13}{2}, -\frac{9}{2})$



Identify the length of the major axis and length of the minor axis of each.

$$65) \frac{\left(x - \frac{19}{2}\right)^2}{81} + \frac{\left(y + \frac{15}{2}\right)^2}{64} = 1$$

- A) Major Axis: 18 units  
Minor Axis: 12 units
- B) Major Axis: 16 units  
Minor Axis: 6 units
- C) Major Axis: 18 units  
Minor Axis: 16 units
- D) Major Axis: 16 units  
Minor Axis: 2 units

Use the information provided to write the standard form equation of each ellipse.

$$66) 16x^2 + 9y^2 - 160x + 72y - 32 = 0$$

- A)  $\frac{(x-5)^2}{64} + \frac{(y-4)^2}{36} = 1$
- B)  $\frac{(x-5)^2}{64} + \frac{(y+4)^2}{36} = 1$
- C)  $\frac{(x-5)^2}{36} + \frac{(y+4)^2}{36} = 1$
- D)  $\frac{(x-5)^2}{36} + \frac{(y+4)^2}{64} = 1$

$$67) \text{ Vertices: } (15, 2), (-7, 2) \\ \text{ Co-vertices: } (4, 9), (4, -5)$$

- A)  $\frac{(x-4)^2}{49} + \frac{(y-2)^2}{121} = 1$
- B)  $\frac{(x+2)^2}{121} + \frac{(y-4)^2}{49} = 1$
- C)  $\frac{(x-4)^2}{121} + \frac{(y-2)^2}{49} = 1$
- D)  $\frac{(x-2)^2}{121} + \frac{(y+4)^2}{49} = 1$

Identify the asymptotes of each.

$$68) \frac{(x-8)^2}{100} - \frac{(y+8)^2}{16} = 1$$

A)  $y = \frac{5}{2}x + 12$

$$y = -\frac{5}{2}x - 28$$

B)  $y = \frac{2}{5}x - \frac{56}{5}$

$$y = -\frac{2}{5}x - \frac{24}{5}$$

C)  $y = \frac{2}{5}x - \frac{24}{5}$

$$y = -\frac{2}{5}x - \frac{56}{5}$$

D)  $y = \frac{5}{2}x - 28$

$$y = -\frac{5}{2}x + 12$$

Identify the vertices and foci of each.

$$69) \frac{(y-9)^2}{81} - \frac{(x-4)^2}{16} = 1$$

A) Vertices:  $(4, 18), (4, 0)$

Foci:  $(4, 9 + \sqrt{97}), (4, 9 - \sqrt{97})$

B) Vertices:  $(8, 9), (0, 9)$

Foci:  $(4 + \sqrt{97}, 9), (4 - \sqrt{97}, 9)$

C) Vertices:  $(13, 9), (-5, 9)$

Foci:  $(4 + \sqrt{97}, 9), (4 - \sqrt{97}, 9)$

D) Vertices:  $(4, 18), (4, 0)$

Foci:  $(4, 9 + \sqrt{82}), (4, 9 - \sqrt{82})$

Use the information provided to write the standard form equation of each hyperbola.

$$70) -x^2 + 4y^2 - 18x - 8y - 141 = 0$$

A)  $\frac{(x+9)^2}{16} - \frac{(y-1)^2}{64} = 1$

B)  $\frac{(x+9)^2}{64} - \frac{(y-1)^2}{16} = 1$

C)  $\frac{(x+1)^2}{16} - \frac{(y+9)^2}{64} = 1$

D)  $\frac{(y-1)^2}{16} - \frac{(x+9)^2}{64} = 1$

**Classify each conic section.**

71)  $3y^2 + 4x + 12 = 0$

- A) Parabola            B) Ellipse  
C) Hyperbola          D) Circle

72)  $x^2 + y^2 + 8x + 6y + 21 = 0$

- A) Hyperbola          B) Ellipse  
C) Parabola           D) Circle

73)  $-x^2 + 4y^2 + 4x + 32y + 56 = 0$

- A) Hyperbola          B) Parabola  
C) Circle               D) Ellipse

74)  $4x^2 + 9y^2 - 8x - 36y - 104 = 0$

- A) Hyperbola          B) Circle  
C) Ellipse              D) Parabola

**Solve each system of equations.**

75)  $3x^2 - y^2 - 18x = 0$

$2x - y = 3$

- A)  $(0, -2)$             B)  $(-3, -9), (4, 3)$   
C)  $(-3, -9)$           D)  $(4, 3)$

**Find the absolute value of each complex number.**

76)  $|6 - 4i|$

- A)  $\sqrt{10}$                 B)  $2\sqrt{13}$   
C)  $\sqrt{58}$                 D) 3

77)  $|9 + 6i|$

- A) 10                      B)  $\sqrt{15}$   
C)  $3\sqrt{13}$               D)  $\sqrt{130}$

**Simplify.**

78)  $-5(-5i)(-3 + 8i)$

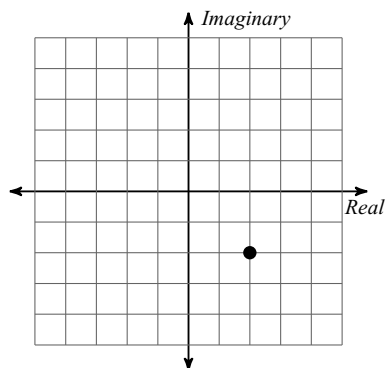
- A)  $-200 - 75i$           B)  $200 - 75i$   
C)  $200 + 75i$           D)  $125i$

79)  $-2(-2 - i) + 4(-i)$

- A)  $4 - 2i$                 B)  $-4 - 2i$   
C)  $4 - 6i$                 D) 8

**Identify each complex number graphed.**

80)



- A)  $2 - 2i$                 B)  $2 + 2i$   
C)  $-2 - 2i$               D)  $-2 + 2i$

**Find the number of possible outcomes.**

- 81) A basket contains two apples and three peaches. You randomly pick a piece of fruit.
- A) 1      B) 5  
C) 8      D) 3

**Find the probability.**

- 82) You flip a coin and then roll a fair six-sided die. The coin lands heads-up and the die shows a six.
- A)  $\frac{5}{26} \approx 0.192$       B)  $\frac{1}{12} \approx 0.083$   
C)  $\frac{3}{11} \approx 0.273$       D)  $\frac{1}{4} = 0.25$

- 83) A cooler contains fourteen bottles of sports drink: six lemon-lime flavored and eight orange flavored. You randomly grab a bottle and give it to your friend. Then, you randomly grab a bottle for yourself. You and your friend both get lemon-lime.
- A)  $\frac{15}{91} \approx 0.165$       B)  $\frac{1}{4} = 0.25$   
C)  $\frac{7}{26} \approx 0.269$       D)  $\frac{7}{22} \approx 0.318$

- 84) A basket contains four apples, three peaches, and four pears. You randomly select a piece of fruit. It is an apple or a peach.
- A)  $\frac{8}{13} \approx 0.615$       B)  $\frac{10}{13} \approx 0.769$   
C)  $\frac{9}{10} = 0.9$       D)  $\frac{7}{11} \approx 0.636$

- 85) A bag contains five yellow tennis balls numbered one to five. The bag also contains six green tennis balls numbered one to six. You randomly pick a tennis ball. It is yellow or has a number greater than four.
- A)  $\frac{2}{3} \approx 0.667$       B)  $\frac{7}{12} \approx 0.583$   
C)  $\frac{1}{3} \approx 0.333$       D)  $\frac{7}{11} \approx 0.636$

**Find the number of possibilities in each scenario.**

- 86) The student body of 110 students wants to elect a president and vice president.
- A) 6,585      B) 13,870  
C) 47,960      D) 11,990
- 87) There are 15 applicants for four Software Tester positions.
- A) 1,365      B) 227  
C) 4,095      D) 1,912

## Answers to Final Exam Review (ID: 1)

- |       |       |       |       |
|-------|-------|-------|-------|
| 1) C  | 2) C  | 3) D  | 4) A  |
| 5) C  | 6) A  | 7) D  | 8) D  |
| 9) A  | 10) C | 11) C | 12) A |
| 13) B | 14) C | 15) C | 16) A |
| 17) B | 18) B | 19) B | 20) C |
| 21) C | 22) B | 23) D | 24) B |
| 25) B | 26) B | 27) D | 28) B |
| 29) B | 30) D | 31) D | 32) D |
| 33) C | 34) D | 35) B | 36) B |
| 37) B | 38) C | 39) A | 40) B |
| 41) D | 42) A | 43) B | 44) B |
| 45) C | 46) B | 47) B | 48) D |
| 49) A | 50) A | 51) C | 52) D |
| 53) D | 54) A | 55) A | 56) D |
| 57) A | 58) B | 59) A | 60) A |
| 61) C | 62) C | 63) A | 64) D |
| 65) C | 66) D | 67) C | 68) B |
| 69) A | 70) D | 71) A | 72) D |
| 73) A | 74) C | 75) C | 76) B |
| 77) C | 78) A | 79) A | 80) A |
| 81) B | 82) B | 83) A | 84) D |
| 85) D | 86) D | 87) A |       |