

PRINTABLE VERSION

Quiz 5

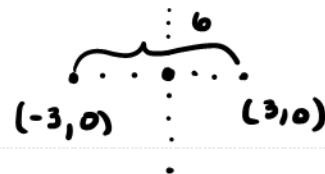
You scored 100 out of 100

Question 1

Your answer is CORRECT.

State the coordinates of the vertices, and then state the length of the transverse axis for the following:

Horizontal $\rightarrow$ first $\frac{x^2}{(9)} - \frac{y^2}{(16)} = 1$



- a) ☐ Coordinates of vertices: $(-3, -4)$, $(3, 4)$; Length of transverse axis: 8.
- b) ☐ Coordinates of vertices: $(0, -8)$, $(0, 8)$; Length of transverse axis: 8.
- c) ☒ Coordinates of vertices: $(-3, 0)$, $(3, 0)$; Length of transverse axis: 6.**
- d) ☐ Coordinates of vertices: $(4, 3)$, $(-4, 3)$; Length of transverse axis: 6.
- e) ☐ Coordinates of vertices: $(0, -4)$, $(0, 4)$; Length of transverse axis: 8.
- f) ☐ None of the above.

$$a^2 = 9$$

$$a = \pm 3$$

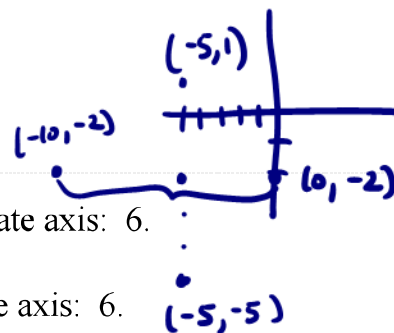
Question 2

Your answer is CORRECT.

State the coordinates of the endpoints of the conjugate axis, and then state the length of the conjugate axis for the following:

vertical $\downarrow$ $\frac{(y+2)^2}{(9)} - \frac{(x+5)^2}{(25)} = 1$

$\uparrow b^2$



- a) ☐ Endpoints of conjugate axis: $(-10, -5)$, $(0, 1)$; Length of conjugate axis: 6.
- b) ☐ Endpoints of conjugate axis: $(5, -5)$, $(5, 1)$; Length of conjugate axis: 6.
- c) ☒ Endpoints of conjugate axis: $(-10, -2)$, $(0, -2)$; Length of conjugate axis: 10.**
- d) ☐ Endpoints of conjugate axis: $(-5, -5)$, $(-5, 1)$; Length of conjugate axis: 6.

- e) ☐ Endpoints of conjugate axis: $(-10, -5)$, $(0, 1)$; Length of conjugate axis: 10.
- f) ☐ None of the above.

Question 3

Your answer is CORRECT.

State the coordinates of the foci for the following:

Vertical $\rightarrow \frac{y^2}{(16)} - \frac{x^2}{(25)} = 1$

$$c^2 = a^2 + b^2$$

$$c^2 = 16 + 25$$

$$c^2 = 41$$

$$c = \pm\sqrt{41}$$

a) ☐ $\{(\sqrt{41}, 0), (-\sqrt{41}, 0)\}$

$$c: (0, 0)$$

b) ☐ $\{(-3, 0), (3, 0)\}$

$$\text{Foci: } (0, \pm\sqrt{41})$$

c) ☒ $\{(0, \sqrt{41}), (0, -\sqrt{41})\}$

d) ☐ $\{(\sqrt{41}, 3), (-\sqrt{41}, -3)\}$

e) ☐ $\{(0, -3), (0, 3)\}$

f) ☐ None of the above.

Question 4

Your answer is CORRECT.

State the equations of the asymptotes for the following:

$$y = \pm\frac{3}{5}x$$

$\rightarrow \frac{x^2}{(25)} - \frac{y^2}{(9)} = 1$

$a^2 \quad b^2$

a) ☐ $y = \frac{5}{3}x$, $y = -\frac{5}{3}x$

b) ☐ $y = 3x$, $y = -3x$

c) ☐ $y = 5x$, $y = -5x$

d) ☐ $x = 0$, $y = 0$

e) ☒ $y = \frac{3}{5}x$, $y = -\frac{3}{5}x$

f) ☐ None of the above.

Horizontal $y = \pm\frac{b}{a}x \Rightarrow y = \pm\frac{3}{5}x$

Question 5

Your answer is CORRECT.

$$e = \frac{c}{a} = \frac{\pm \sqrt{29}}{5}$$

State the eccentricity for the following:

$$\frac{(x-2)^2}{(25)} - \frac{(y-5)^2}{(4)} = 1$$

- a) ☐ $e = \frac{5}{2}$
- b) ☐ $e = \frac{1}{10} \sqrt{29}$
- c) ☒ $e = \frac{1}{5} \sqrt{29}$**
- d) ☐ $e = \frac{1}{2} \sqrt{29}$
- e) ☐ $e = \frac{2}{5}$
- f) ☐ None of the above.

$$c^2 = a^2 + b^2$$

$$c^2 = 25 + 4$$

$$c = \sqrt{29}$$

Question 6

Your answer is CORRECT.

Write the following in standard form for a hyperbola.

$$-9x^2 + 90x - 305 + 16y^2 - 64y = 0$$

a) ☐ $\frac{(x-5)^2}{(16)} - \frac{(y-2)^2}{(9)} = 1$

b) ☐ $\frac{(y-2)^2}{(16)} - \frac{(x-5)^2}{(9)} = 1$

c) ☒ $\frac{(y-2)^2}{(9)} - \frac{(x-5)^2}{(16)} = 1$

$$-9(x^2 - 10x + 5^2) + 16(y^2 - 4y + 2^2) = 305 - \underline{4 \cdot 5^2} + \underline{16 \cdot 2^2}$$

$$\frac{-9(x-5)^2}{144} + \frac{16(y-2)^2}{144} = \frac{144}{144}$$

$$\Rightarrow -\frac{(x-5)^2}{16} + \frac{(y-2)^2}{9} = 1$$

d) ☐ $\frac{(x-5)^2}{(9)} - \frac{(y-2)^2}{(16)} = 1$

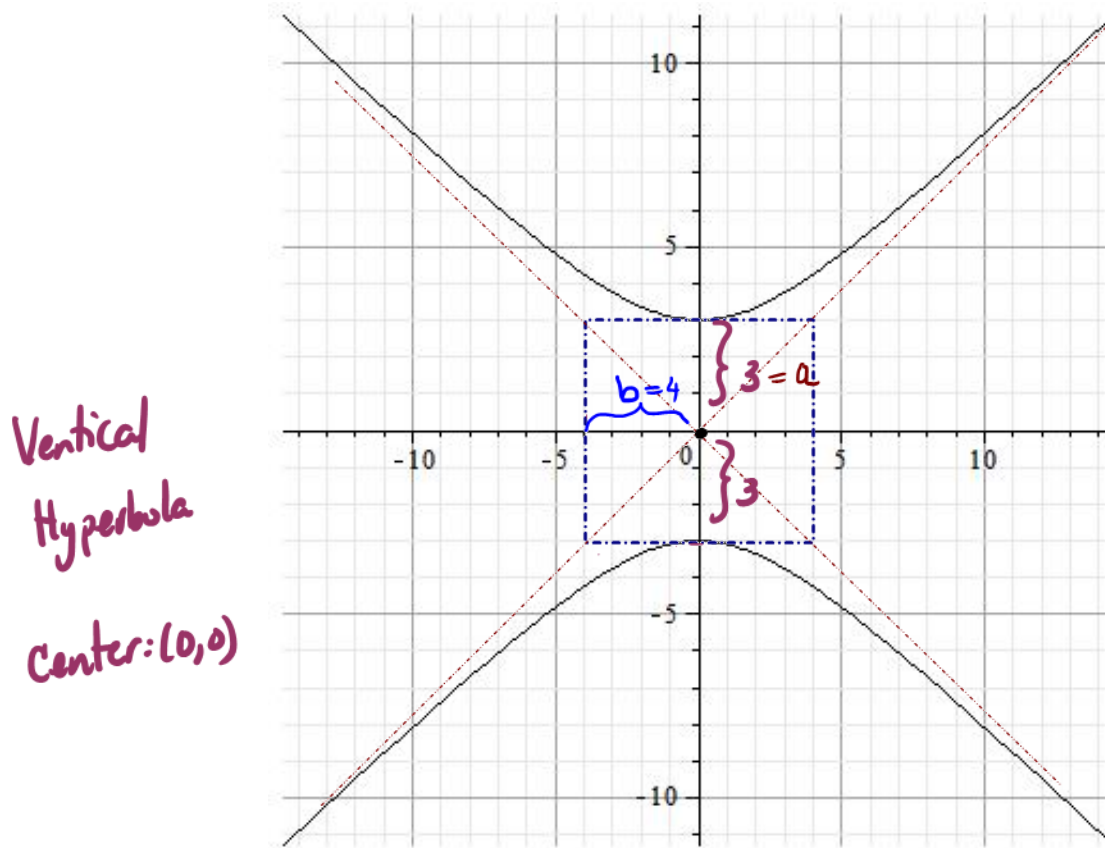
e) ☐ $\frac{(y+2)^2}{(9)} - \frac{(x+5)^2}{(16)} = 1$

f) ☐ None of the above.

Question 7

Your answer is CORRECT.

Given:



Which of the following is the equation of this hyperbola?

a) ☐ $x^2 = -9y$

b) ☐ $y^2 = -16x$

c) ☐ $\frac{x^2}{(16)} + \frac{y^2}{(9)} = 1$

$$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$

$$\Rightarrow \frac{y^2}{9} - \frac{x^2}{16} = 1$$

d) ☐ $\frac{x^2}{(16)} - \frac{y^2}{(9)} = 1$

e) ☒ $\frac{y^2}{(9)} - \frac{x^2}{(16)} = 1$

f) ☐ None of the above.

Question 8

Your answer is CORRECT.

Classify the following:

Hyperbola, horizontal

$$\frac{(x-8)^2}{(36)} - \frac{(y+2)^2}{(4)} = 1$$

↑ ↑

a) ☒ Hyperbola

b) ☐ Parabola

c) ☐ Ellipse

d) ☐ Circle

e) ☐ None of the above.

Question 9

Your answer is CORRECT.

Classify the following:

$$25x^2 + 100x - 100 - 4y^2 - 40y = 0$$

↓

a) ☐ Circle

b) ☐ Ellipse

c) ☐ Parabola

d) ☒ Hyperbola

e) ☐ None of the above.

Question 10

Number 9

$$25x^2 + 100x - 100 - 4y^2 - 40y = 0$$

$$25(x^2 + 4x + \underline{2^2}) - 4(y^2 + 10y + \underline{5^2}) = 100 + 25(4) - 4(25)$$

$$\frac{25(x+2)^2}{100} - \frac{4(y+5)^2}{100} = \frac{100}{100}$$

$$\frac{(x+2)^2}{4} - \frac{(y+5)^2}{25} = 1 \quad \text{Hyperbola}$$

Your answer is CORRECT.

Describe the graph of this equation:

$$\sqrt{(y+2)^2} = 0$$

a) ☐ Two intersecting lines

b) ☐ Point

c) ☒ One line

d) ☐ There is no graph

e) ☐ None of the above.

$$y+2=0$$

$$y=-2$$

Question 11

Your answer is CORRECT.

Describe the graph of this equation:

$$4x^2 - 16y^2 = 0$$

a) ☐ The two intersecting lines: $y = \pm 2x$

b) ☒ The two intersecting lines: $y = \pm \frac{1}{2}x$

c) ☐ The two intersecting lines: $y = 2x - 4$, $y = -2x - 4$

d) ☐ A hyperbola.

e) ☐ An ellipse.

f) ☐ None of the above.

$$\frac{4x^2}{16} = \frac{16y^2}{16}$$

$$\frac{x^2}{4} = y^2$$

$$y = \pm \frac{x}{2}$$

Question 12

Your answer is CORRECT.

Describe the graph of this equation:

$$(x-1)^2 + (y-5)^2 = 0$$

radius
of 0

a) ☐ A circle.

b) ☐ An ellipse.

- c) ☐ The point (-1, -5).
- d) ☐ A parabola.
- c) ☒** The point (1, 5).
- f) ☐ None of the above.

Question 13

Your answer is CORRECT.

Graph the following system of equations. How many points of intersection are there?

$$x^2 + y^2 = 4$$

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

a) ☐ 1

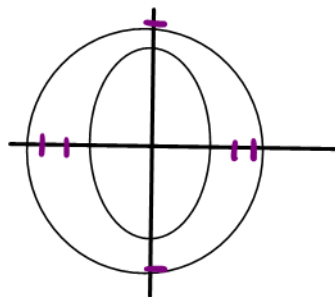
b) ☐ 6

c) ☒ 0

d) ☐ 2

e) ☐ 4

f) ☐ None of the above.



Question 14

Your answer is CORRECT.

Graph the following system of equations. How many points of intersection are there?

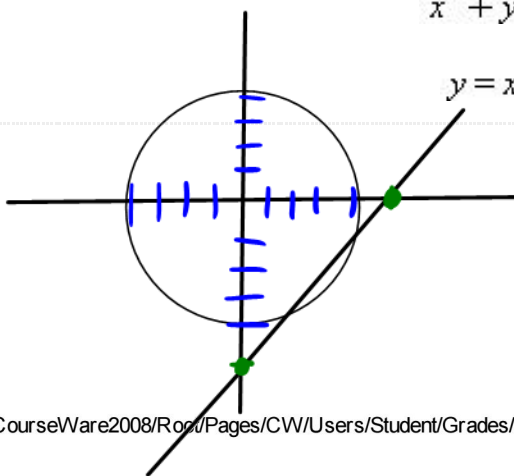
$$x^2 + y^2 = 16$$

$$y = x - 5$$

a) ☐ 1

b) ☒ 2

c) ☐ 0



- d) ☐ 4
- e) ☐ 3
- f) ☐ None of the above.

Question 15

Your answer is CORRECT.

Find the x -coordinate(s) of the point(s) of intersection for the following functions below:

$$f(x) = x^2 - 4x + 2$$

$$g(x) = -3x + 4$$

$$\left. \begin{array}{l} y = x^2 - 4x + 2 \\ y = -3x + 4 \end{array} \right\}$$

- a) ☐ $\{-2, 1\}$
- b) ☐ $\{2, 5\}$
- c) ☒ $\{-1, 2\}$
- d) ☐ $\{1\}$
- e) ☐ $\{-2, 4\}$
- f) ☐ None of the above.

$$x^2 - 4x + 2 = -3x + 4$$

$$x^2 - x - 2 = 0$$

$$(x + 1)(x - 2) = 0$$

$$x = -1 \quad x = 2$$

Question 16

Your answer is CORRECT.

Find the x -coordinate(s) of the point(s) of intersection for the following equations:

$$\text{I. } xy = -2 \Rightarrow y = \frac{-2}{x}$$

$$\text{II. } x - y = -3 \quad \leftarrow \text{substitute}$$

- a) ☒ $\{-2, -1\}$
- b) ☐ $\{1, 2\}$
- c) ☐ $\{2\}$
- d) ☐ $\{-4, -2\}$

$$x - \left(\frac{-2}{x}\right) = -3$$

$$x \left[x + \frac{2}{x} \right] = [-3]x$$

$$x^2 + 2 = -3x$$

$$x^2 + 3x + 2 = 0$$

$$\boxed{x = -1 \quad x = -2}$$

$$\rightarrow (x + 1)(x + 2) = 0$$

e) ☐ $\left\{2, -\frac{1}{2}\right\}$

f) ☐ None of the above.

Question 17

Your answer is CORRECT.

Find the x -coordinate(s) of the point(s) of intersection for the following equations:

$$6x^2 + 2y^2 = 8$$

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

a) ☐ $\{0, 1\}$

b) ☐ $\{-2, 2\}$

c) ☐ $\{-6, -4\}$

d) ☐ $\left\{1, \frac{1}{2}\right\}$

e) ☒ $\{-1, 1\}$

f) ☐ None of the above.

$$\begin{array}{r}
 6x^2 + 2y^2 = 8 \\
 + \quad 10x^2 - 2y^2 = 8 \\
 \hline
 16x^2 = 16 \\
 x^2 = 1 \\
 x = \pm 1
 \end{array}$$

Question 18

Your answer is CORRECT.

Find the x -coordinate(s) of the point(s) of intersection for the following equations:

$$(3x^2 + 7y^2 = 3) \cdot 2$$

$$[x^2 + 2y^2 = 6] \cdot 7$$

Elimination Method

Hint: Use elimination, and eliminate y .

$$-6x^2 - 14y^2 = -6$$

$$7x^2 + 14y^2 = 42$$

a) ☐ $\{-5, 6\}$

b) ☒ $\{-6, 6\}$

c) ☐ $\{-12, 12\}$

$$x^2 = 36$$

$$x = \pm 6$$

- d) ☐ {3, 6}
- e) ☐ {-8, 4}
- f) ☐ None of the above.

Question 19

Your answer is **CORRECT**.

Use the given features of the following hyperbola to write its equation in standard form.

Center (6, 9)
 Length of the transverse axis = 14 $\leftarrow a = 7$
 Length of the conjugate axis = 6 $\leftarrow b = 3$
 Horizontal transverse axis $\leftarrow$ Horizontal hyperbola

a) ☐ $\frac{(x-6)^2}{(49)} + \frac{(y-9)^2}{(9)} = 1$

b) ☒ $\frac{(x-6)^2}{(49)} - \frac{(y-9)^2}{(9)} = 1$

c) ☐ $\frac{(x-6)^2}{(9)} - \frac{(y-9)^2}{(49)} = 1$

d) ☐ $\frac{(y-9)^2}{(9)} - \frac{(x-6)^2}{(49)} = 1$

e) ☐ $\frac{(x-6)^2}{(196)} - \frac{(y-9)^2}{(36)} = 1$

- f) ☐ None of the above.

$$\frac{(x-6)^2}{49} - \frac{(y-9)^2}{9} = 1$$

Question 20

Your answer is **CORRECT**.

Use the given features of the following hyperbola to write its equation in standard form.

Center (6, 9)
 Length of the transverse axis = 14
 Length of the conjugate axis = 6
 Vertical transverse axis

a) ☐ $\frac{(x-6)^2}{(49)} + \frac{(y-9)^2}{(9)} = 1$

b) ☒ $\frac{(y-9)^2}{(49)} - \frac{(x-6)^2}{(9)} = 1$

c) ☐ $\frac{(y-6)^2}{(9)} - \frac{(x-9)^2}{(49)} = 1$

d) ☐ $\frac{(y-9)^2}{(9)} - \frac{(x-6)^2}{(49)} = 1$

e) ☐ $\frac{(y-9)^2}{(196)} - \frac{(x-6)^2}{(36)} = 1$

f) ☐ None of the above.

$$\frac{(y-9)^2}{49} - \frac{(x-6)^2}{9} = 1$$