



MATHS

BOOKS - INDEPENDENTLY PUBLISHED

MATHS (ENGLISH)

CONIC SECTIONS

Examples

1.
$$\frac{(y - 3)^2}{9} - \frac{(x - 1)^2}{16} = 1$$

Which conic section does this equation

define? Also find, if they exist,

(i) the center

(ii) the vertex/vertices

(iii) The directrix

(v) the asymptotes

(vi) the eccentricity



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$$2. (y + 4)^2 = -6(x - 2)$$

Which conic section does this define? Also find, if they exist,

(i) the center

(ii) the vertex/vertices

(iii) the focus/foci

(iv) the directrix

(v) the asymptotes

(vi) the eccentricity



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$$3. \frac{(x + 3)^2}{25} + \frac{(y - 8)^2}{100} = 1$$

Which conic section does this equation define? Also find, if they exist,

(i) the center

(ii) the vertex/vertices

(iii) the focus/foci

(iv) the directrix

(v) the asymptotes

(vi) the eccentricity



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4. Name the conic by finding its standard-form equation.

$$2x^2 + 3y^3 + 12x - 24y + 60 = 0$$



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5. Name the conic by finding its standard-form equation.

$$4x^2 + 4y^2 - 12x - 20y - 2 = 0$$



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6. Find the foci of the conic $y^2 + 2x + 2y = 5$.



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7. Find the standard equation of a hyperbola with center $(3,-4)$, vertices $(3,1)$ and $(3,7)$ and asymptotes $y + 4 = \pm \frac{3}{4}(x - 3)$



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Exercises

1. Which of the following is a focus of

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

A. $(1,-1)$

B. (2,-1)

C. (3,-1)

D. (2,-2)

Answer:



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2. Which of the following is an asymptote of

$$3x^2 - 4y^2 - 12 = 0?$$

A. $y = \frac{4}{3}x$

$$\text{B. } y = -\frac{2}{\sqrt{3}}x$$

$$\text{C. } y = -\frac{3}{4}x$$

$$\text{D. } y = \frac{\sqrt{3}}{2}x$$

Answer:



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3. The standard equation of a parabola with focus (2,-3) and directrix $x=6$ is

$$\text{A. } (y + 3)^2 = 8(x - 2)$$

B. $(y + 3)^2 = -8(x - 4)$

C. $(x - 2)^2 = 8(y + 3)$

D. $(x + 2)^2 = -8(y - 3)$

Answer:



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4. The standard equation of an ellipse with vertices $(-5,2)$ and $(3,2)$ and minor axis of length 6 is

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

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

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

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

Answer:



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5. Which of the following is a vertex of

$$16x^2 - y^2 - 32x - 6y - 57 = 0?$$

A. (1,-1)

B. (1,3)

C. (1,5)

D. (-1,-3)

Answer: D



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6. The graph of $x^2 = (2y + 3)^2$ is

A. an ellipse

B. a parabola

C. a hyperbola

D. intersecting lines

Answer:



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