

Eccentricity of Conic Sections

Identify the eccentricity of each.

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

2) $\frac{x^2}{4} + \frac{y^2}{25} = 1$

3) $x = 2y^2$

4) $\frac{x^2}{15} + \frac{y^2}{45} = 1$

5) $\frac{y^2}{16} - x^2 = 1$

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

7) $\frac{(x+2)^2}{4} + \frac{(y+2)^2}{16} = 1$

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

9) $(x-4)^2 + (y-2)^2 = 1$

10) $y = (x-6)^2 + 3$

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

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

13) $x^2 - 9y^2 - 9 = 0$

14) $25x^2 + 16y^2 - 400 = 0$

15) $x^2 + y^2 + 4x + 8y + 11 = 0$

16) $4x^2 + 9y^2 - 16x - 36y + 16 = 0$

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

17) Vertices: $(11, 8), (5, 8)$
Eccentricity = $\frac{\sqrt{178}}{3}$

18) Foci: $(19, -3), (-7, -3)$
Eccentricity = $\frac{13}{5}$

19) Center at $(9, 3)$
Vertex at $(14, 3)$
Eccentricity = $\frac{\sqrt{61}}{5}$

20) Center at $\left(-\frac{3}{2}, 8\right)$
Focus at $\left(-\frac{3}{2}, 8 + \sqrt{185}\right)$
Eccentricity = $\frac{\sqrt{185}}{8}$

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

21) Eccentricity = $\frac{5}{13}$
Vertices: $(3, 3), (-23, 3)$

22) Eccentricity = $\frac{5}{13}$
Foci: $(-5, 4), (-5, -6)$

23) Eccentricity = $\frac{2\sqrt{14}}{9}$
Co-vertices: $(0, -10), (-10, -10)$

24) Eccentricity = $\frac{\sqrt{21}}{5}$
Center: $(-8, 8)$
Vertex: $(2, 8)$

25) Eccentricity = $\frac{\sqrt{14}}{14}$
Center: $(2, -9)$
Focus: $(2, -9 - \sqrt{5})$

26) Eccentricity = $\frac{\sqrt{35}}{7}$
Center: $(7, -4)$
Co-vertex: $(7 + \sqrt{10}, -4)$