Name_____

Eccentricity of Conic Sections

Date_____ Period____

Identify the eccentricity of each.

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

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

3) $x = 2y^2$

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

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

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

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

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

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

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

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

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

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 $= \dfrac{\sqrt{178}}{3}$

18) Foci: $(19, -3), (-7, -3)$

Eccentricity $= \dfrac{13}{5}$

19) Center at $(9, 3)$

Vertex at $(14, 3)$

Eccentricity $= \dfrac{\sqrt{61}}{5}$

20) Center at $\left(-\dfrac{3}{2}, 8\right)$

Focus at $\left(-\dfrac{3}{2}, 8 + \sqrt{185}\right)$

Eccentricity $= \dfrac{\sqrt{185}}{8}$

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

21) Eccentricity $= \dfrac{5}{13}$

Vertices: $(3, 3), (-23, 3)$

22) Eccentricity $= \dfrac{5}{13}$

Foci: $(-5, 4), (-5, -6)$

23) Eccentricity $= \dfrac{2\sqrt{14}}{9}$

Co-vertices: $(0, -10), (-10, -10)$

24) Eccentricity $= \dfrac{\sqrt{21}}{5}$

Center: $(-8, 8)$

Vertex: $(2, 8)$

25) Eccentricity $= \dfrac{\sqrt{14}}{14}$

Center: $(2, -9)$

Focus: $(2, -9 - \sqrt{5})$

26) Eccentricity $= \dfrac{\sqrt{35}}{7}$

Center: $(7, -4)$

Co-vertex: $(7 + \sqrt{10}, -4)$

Name_____

Eccentricity of Conic Sections

Date_____ Period____

Identify the eccentricity of each.

1) $\dfrac{x^2}{16} - \dfrac{y^2}{9} = 1$ Eccentricity: $\dfrac{5}{4} = 1.25$

2) $\dfrac{x^2}{4} + \dfrac{y^2}{25} = 1$ Eccentricity: $\dfrac{\sqrt{21}}{5} \approx 0.917$

3) $x = 2y^2$

   Eccentricity: 1

4) $\dfrac{x^2}{15} + \dfrac{y^2}{45} = 1$ Eccentricity: $\dfrac{\sqrt{6}}{3} \approx 0.816$

5) $\dfrac{y^2}{16} - x^2 = 1$ Eccentricity: $\dfrac{\sqrt{17}}{4} \approx 1.031$

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

   Eccentricity: 0

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

   Eccentricity: $\dfrac{\sqrt{3}}{2} \approx 0.866$

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

   Eccentricity: $\dfrac{\sqrt{13}}{2} \approx 1.803$

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

   Eccentricity: 0

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

   Eccentricity: 1

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

   Eccentricity: $\dfrac{\sqrt{41}}{4} \approx 1.601$

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

   Eccentricity: $\dfrac{4\sqrt{3}}{7} \approx 0.99$

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

   Eccentricity: $\dfrac{\sqrt{10}}{3} \approx 1.054$

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

   Eccentricity: $\dfrac{3}{5} = 0.6$

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

   Eccentricity: 0

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

   Eccentricity: $\dfrac{\sqrt{5}}{3} \approx 0.745$

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

17) Vertices: $(11, 8), (5, 8)$

Eccentricity $= \dfrac{\sqrt{178}}{3}$

$\dfrac{(x-8)^2}{9} - \dfrac{(y-8)^2}{169} = 1$

18) Foci: $(19, -3), (-7, -3)$

Eccentricity $= \dfrac{13}{5}$

$\dfrac{(x-6)^2}{25} - \dfrac{(y+3)^2}{144} = 1$

19) Center at $(9, 3)$
Vertex at $(14, 3)$

Eccentricity $= \dfrac{\sqrt{61}}{5}$

$\dfrac{(x-9)^2}{25} - \dfrac{(y-3)^2}{36} = 1$

20) Center at $\left(-\dfrac{3}{2}, 8\right)$

Focus at $\left(-\dfrac{3}{2}, 8 + \sqrt{185}\right)$

Eccentricity $= \dfrac{\sqrt{185}}{8}$

$\dfrac{(y-8)^2}{64} - \dfrac{\left(x+\dfrac{3}{2}\right)^2}{121} = 1$

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

21) Eccentricity $= \dfrac{5}{13}$

Vertices: $(3, 3), (-23, 3)$

$\dfrac{(x+10)^2}{169} + \dfrac{(y-3)^2}{144} = 1$

22) Eccentricity $= \dfrac{5}{13}$

Foci: $(-5, 4), (-5, -6)$

$\dfrac{(x+5)^2}{144} + \dfrac{(y+1)^2}{169} = 1$

23) Eccentricity $= \dfrac{2\sqrt{14}}{9}$

Co-vertices: $(0, -10), (-10, -10)$

$\dfrac{(x+5)^2}{25} + \dfrac{(y+10)^2}{81} = 1$

24) Eccentricity $= \dfrac{\sqrt{21}}{5}$

Center: $(-8, 8)$
Vertex: $(2, 8)$

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

25) Eccentricity $= \dfrac{\sqrt{14}}{14}$

Center: $(2, -9)$
Focus: $(2, -9 - \sqrt{5})$

$\dfrac{(x-2)^2}{65} + \dfrac{(y+9)^2}{70} = 1$

26) Eccentricity $= \dfrac{\sqrt{35}}{7}$

Center: $(7, -4)$
Co-vertex: $(7 + \sqrt{10}, -4)$

$\dfrac{(x-7)^2}{10} + \dfrac{(y+4)^2}{35} = 1$