CONICS Review 10C Name_____

Assignment # ____. You must do your work on a separate piece of paper.

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

1) Vertices: $(14, 10), (-6, 10)$
Asymptotes: $y = \frac{9}{10}x + \frac{32}{5}$
$y = -\frac{9}{10}x + \frac{68}{5}$

2) Vertices: $(5, 8), (3, 8)$
Foci: $(4 + \sqrt{65}, 8), (4 - \sqrt{65}, 8)$

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

3) Vertex: $(-1, 7)$, Focus: $\left(-1, \frac{253}{36}\right)$

4) Focus: $\left(6, -\frac{179}{20}\right)$, Directrix: $y = -\frac{181}{20}$

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

5) Center lies in the third quadrant
Tangent to $y = -19$, $x = 4$, and $y = -7$

6) Ends of a diameter: $(-15, -2)$ and $(5, -3)$

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

7) Vertices: $(10 + 3\sqrt{10}, 5), (10 - 3\sqrt{10}, 5)$
Foci: $(10 + \sqrt{70}, 5), (10 - \sqrt{70}, 5)$

8) Foci: $(1, \sqrt{105}), (1, -\sqrt{105})$
Endpoints of minor axis: $(5, 0), (-3, 0)$

9) $49x^2 + 25y^2 + 250y - 600 = 0$

10) $x^2 + y^2 - 6x - 12y - 47 = 0$

Identify the vertices, foci, and asymptotes of each hyperbola.

11) $-x^2 + 4y^2 - 8x + 24y - 44 = 0$

12) $x^2 - y^2 - 16x - 18y - 42 = 0$

Identify the vertex, focus, axis of symmetry, and directrix of each parabola.

13) $y = 3x^2 - 42x + 139$

14) $x = -y^2 - 8y - 12$

Solve each system of equations.

15) $2x^2 - 2y^2 + 15x + 28y - 83 = 0$
$13x^2 + 2y^2 + 105x - 28y + 188 = 0$

16) $2x^2 + y^2 + 15x + 10y + 13 = 0$
$12x^2 + y^2 + 105x + 10y + 93 = 0$

17) $x^2 - 10x - y + 19 = 0$
$2x + y - 3 = 0$

18) $3x^2 + 2x - y - 6 = 0$
$2x - y = 3$

19) Identify the conics
$x^2 - 3xy + 2y^2 + 2x - y + 6$

20) Identify the conics $3x^2 - 4xy + 2y^2 - 3y = 0$

21) Identify the conics
$x^2 - 6xy + 9y^2 + x - y - 1 = 0$

22) Identify the conics
$144x^2 - 216x + 144y^2 + 96y - 47 = 0$

23) Write an equation of a hyperbola with vertices at $(-10, 4)$ and $(-2, 4)$ and $e = 2.4$.

Answers to Assignment # ____. You must do your work on a separate piece of paper.

1) $\frac{(x-4)^2}{100} - \frac{(y-10)^2}{81} = 1$

2) $(x-4)^2 - \frac{(y-8)^2}{64} = 1$

3) $(x+1)^2 = \frac{1}{9}(y-7)$

4) $(x-6)^2 = \frac{1}{5}(y+9)$

5) $(x+2)^2 + (y+13)^2 = 36$

6) $(x+5)^2 + \left(y+\frac{5}{2}\right)^2 = \frac{401}{4}$

7) $\frac{(x-10)^2}{90} + \frac{(y-5)^2}{20} = 1$

8) $\frac{(x-1)^2}{16} + \frac{y^2}{121} = 1$

9) $\frac{x^2}{25} + \frac{(y+5)^2}{49} = 1$

10) $(x-3)^2 + (y-6)^2 = 92$

11) Vertices: $(-4, 1), (-4, -7)$
Foci: $(-4, -3+4\sqrt{5}), (-4, -3-4\sqrt{5})$
Asym.: $y = \frac{1}{2}x - 1$
$y = -\frac{1}{2}x - 5$

12) Vertices: $(13, -9), (3, -9)$
Foci: $(8+5\sqrt{2}, -9), (8-5\sqrt{2}, -9)$
Asym.: $y = x - 17$
$y = -x - 1$

13) Vertex: $(7, -8)$
Focus: $\left(7, -\frac{95}{12}\right)$
Axis of Sym.: $x = 7$
Directrix: $y = -\frac{97}{12}$

14) Vertex: $(4, -4)$
Focus: $\left(\frac{15}{4}, -4\right)$
Axis of Sym.: $y = -4$
Directrix: $x = \frac{17}{4}$

15) $(-1, 8), (-1, 6), (-7, 9), (-7, 5)$

16) $(-1, 0), (-1, -10), (-8, -3), (-8, -7)$

17) $(4, -5)$

18) $(1, -1), (-1, -5)$

19) hyperbola

20) ellipse

21) parabola

22) circle

23) $\frac{(x+6)^2}{16} - \frac{(y-4)^2}{76.16} = 1$