

SBM #3 Review B

Date _____ Period _____

Classify each conic. Then, rewrite into standard form equation of each conic.

1) $x^2 + y^2 + 26x + 12y + 196 = 0$

2) $4x^2 + y^2 + 20y - 96 = 0$

3) $4x^2 - y^2 - 8x + 18y - 177 = 0$

4) $x^2 + 2x + y - 6 = 0$

Identify the center, vertices, co-vertices, foci, length of the major axis, and length of the minor axis of each.

5) $\frac{(x+2)^2}{100} + \frac{(y+2)^2}{49} = 1$

6) $\frac{(x+1)^2}{64} + \frac{(y-1)^2}{81} = 1$

Identify the vertices and foci of each.

7) $\frac{(x-6)^2}{49} - \frac{(y+9)^2}{100} = 1$

8) $\frac{(y-4)^2}{25} - \frac{(x-6)^2}{81} = 1$

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

9) $x = -(y - 7)^2 - 5$

10) $y = \frac{5}{8}(x + 6)^2 + 1$

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

11) Foci: $(1, -4 + 7\sqrt{3}), (1, -4 - 7\sqrt{3})$
Co-vertices: $(8, -4), (-6, -4)$

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

12) Vertices: $(0, 5), (-6, 5)$
Foci: $(-3 + 3\sqrt{10}, 5), (-3 - 3\sqrt{10}, 5)$

Evaluate each determinant.

13) $\begin{vmatrix} -1 & 2 \\ -4 & -1 \end{vmatrix}$

14) $\begin{vmatrix} 0 & -4 & 3 \\ -3 & -1 & 5 \\ -4 & -5 & 1 \end{vmatrix}$

Find the inverse of each matrix.

$$15) \begin{bmatrix} 5 & -2 \\ 9 & 9 \end{bmatrix}$$

Solve each equation or state if there is no unique solution.

$$16) \begin{bmatrix} 10 & 2 \\ -7 & -1 \end{bmatrix} A = \begin{bmatrix} -30 & 4 \\ 17 & -2 \end{bmatrix}$$

Simplify. Write "undefined" for expressions that are undefined.

$$17) \begin{bmatrix} -6 \\ 0 \\ 6 \\ 4 \end{bmatrix} + \begin{bmatrix} -4 & 3 \\ 5 & 5 \\ 1 & 3 \end{bmatrix} + \begin{bmatrix} 5 \\ -6 \\ -6 \\ 0 \end{bmatrix}$$

$$18) 2 \begin{bmatrix} 2 & 1 \\ -5 & -6 \\ 2 & 6 \end{bmatrix}$$

$$19) \begin{bmatrix} -3 & -5 \\ 3 & -1 \end{bmatrix} \cdot \begin{bmatrix} -6 & 4 & -4 \\ 6 & 1 & -4 \end{bmatrix}$$

$$20) \begin{bmatrix} 3 & 2 & -3 \\ -2 & 1 & -4 \end{bmatrix} \cdot \left(\begin{bmatrix} -5 & 2 \\ -2 & -4 \\ -3 & 5 \end{bmatrix} - \begin{bmatrix} -4 & -6 \\ 6 & -5 \\ -4 & -1 \end{bmatrix} \right)$$

$$21) \begin{bmatrix} 3 & -4 \\ 6 & -3 \end{bmatrix} \cdot \begin{bmatrix} -3 \\ 4 \end{bmatrix} - \begin{bmatrix} -4 \\ 6 \end{bmatrix}$$

$$22) \begin{bmatrix} 6 \\ 6 \\ 0 \end{bmatrix} - \left(4 \begin{bmatrix} 3 \\ 6 \\ 0 \end{bmatrix} \right)$$

State the possible rational zeros for each function.

$$23) f(x) = 2x^3 - 4x^2 + x - 21$$

$$24) f(x) = 5x^3 - x^2 - 5x + 1$$

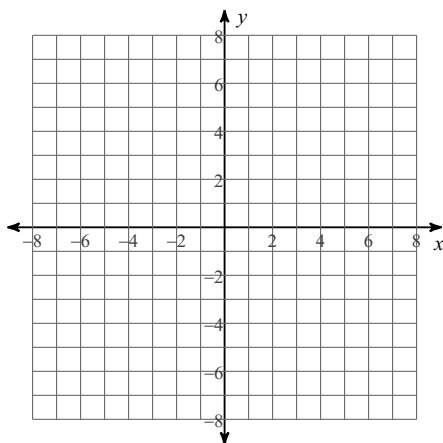
Find all zeros. One zero has been given.

$$25) f(x) = x^3 - 15x^2 + 48x - 36; 3$$

$$26) f(x) = 2x^3 - 13x^2 + 16x - 5; 5$$

Sketch the graph of each function. Then write the following: root (s), domain range, local max, local min, y-intercept, end behavior intervals of increase and decrease.

$$27) f(x) = x^4 - 2x^2 + 1$$



$$28) f(x) = -x^3 - 9x^2 - 24x - 20$$

