

Ch.11 Review

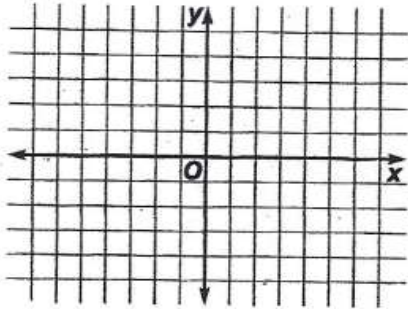
NAME:

PER:

NO CALCULATOR!!!

1. Write the **equation** in standard form, then find the coordinates of the **vertex** and **focus**. Identify the **directrix** and sketch the graph using focal diameter for more accuracy. Show work.

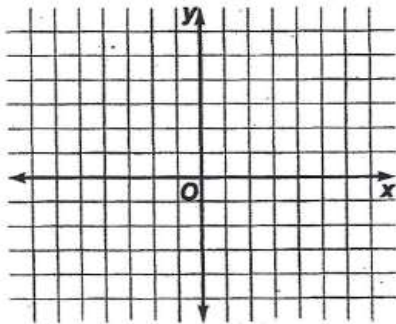
$$x^2 - 2x - 8y + 17 = 0$$



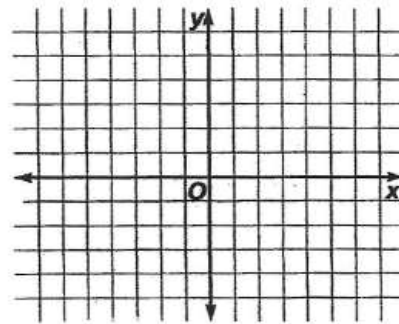
2. Find the **standard form of the equation** for a parabola that opens to the right, has a vertex at (3, -2) and passes through the point (5, -6). Show work.

Write the equation of the parabola that meets each set of conditions. Graph each parabola using the focal diameter for more accuracy. Show work.

3. The vertex is at (-2, 4) and the focus is at (-2, 3).

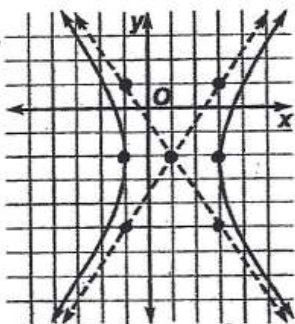


4. The focus is at (2, 1), and the equation of the directrix is $x = -2$.



5. Write an **equation** of the hyperbola where the length of the transverse axis is 8 units, and the foci are at (6,0) and (-4,0). Show your work. It may be helpful to make a rough sketch of the graph.

6. Write the **equation** of the hyperbola in standard form.



7. Identify the **coordinates of the foci** for the hyperbola given in #6. Show work. No decimals!

8. Write the circle **equation** $4x^2 - 36x + 4y^2 - 28y - 2 = 0$ in standard form. No decimals! Use fractions when completing the square. Clearly show all work, then identify the **center** and **radius**.

Write the equation of the ellipse that meets each set of conditions. Show work.

9. The center is at (1, 3), the major axis is parallel to the y -axis, and one vertex is at (1, 8), and $b = 3$.

10. The foci are at $(-2, 1)$ and $(-2, -7)$, and $a = 5$.

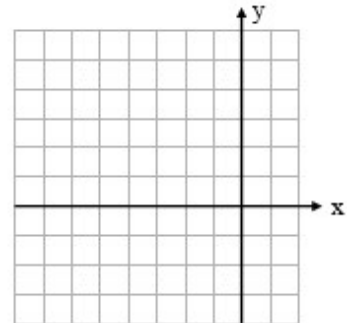
It may be helpful to make a rough sketch of the graphs.

11. **Construction** A semi elliptical arch is used to design a headboard for a bed frame. The headboard will have a height of 2 feet at the center and a width of 5 feet at the base. Where should the craftsman place the foci in order to sketch the arch?

Sketch a diagram and show work.

Don't use a calculator. Use fractions when solving for c .

12. Write $3x^2 + 2y^2 + 24x - 4y + 32 = 0$ in **standard form**. Identify the **center**, **vertices**, **foci**, and carefully graph the equation. Show all steps. Use exact values, no decimals.



CHECK ANSWERS #1-12:

$$\frac{(x+2)^2}{9} + \frac{(y+3)^2}{25} = 1 \quad \frac{(x-1)^2}{4} - \frac{(y+2)^2}{9} = 1 \quad \frac{(x-1)^2}{16} - \frac{y^2}{9} = 1 \quad \frac{(x-1)^2}{9} + \frac{(y-3)^2}{25} = 1 \quad \frac{3}{2} \quad \sqrt{33}$$

$$\left(x - \frac{9}{2}\right)^2 + \left(y - \frac{7}{2}\right)^2 = 33 \quad (x-1)^2 = 8(y-2) \quad \frac{(x+4)^2}{6} + \frac{(y-1)^2}{9} = 1 \quad (x+2)^2 = -4(y-4) \quad (y-1)^2 = 8x$$

$$(1 \pm \sqrt{13}, -2) \quad (1, 2) \quad (-4, 1) \quad (-4, 4) \quad (-4, -2) \quad (1, 4) \quad y = 0 \quad (-4, 1 \pm \sqrt{3}) \quad (y+2)^2 = 8(x-3) \quad \left(\frac{9}{2}, \frac{7}{2}\right)$$