Name: _____

College Algebra: Review (Test 2)

1. Find all solutions of the following inequality.

$$|3x + 1| + 8 \leq 24$$

2. Find all solutions of the following inequality.

$$2|4x - 4| + 7 < 27$$

3. Find all solutions of the following inequality.

$$2|4x + 5| + 10 > 27$$

4. Find the domain of the following function.

$$f(x) = \frac{3x^3 + x^2 + 8x + 9}{x^2 - 16}$$

5. Find the domain of the following function.

$$f(x) = \sqrt{9x + 2}$$

6. Find the domain of the following function.

$$f(x) = \sqrt{|1x + 9| - 6}$$

7. Evaluate the function

$$f(x) = 4x^3 + 6x + 5$$

at $x = 2$, $x = 0$, $x = -3$, and $x = 1/2$.

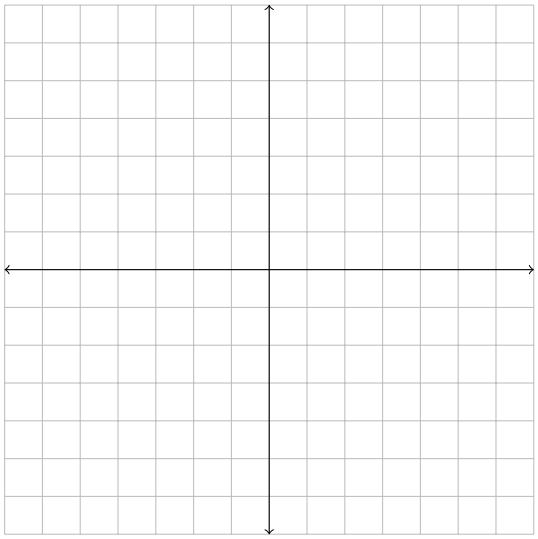
8. Evaluate the function

$$f(x) = \begin{cases} 5x - 3 & \text{if } x \geq 6 \\ \frac{1}{x^2 - 2} & \text{if } x < 6 \end{cases}$$

at $x = 1$, $x = 9$, and $x = -7$.

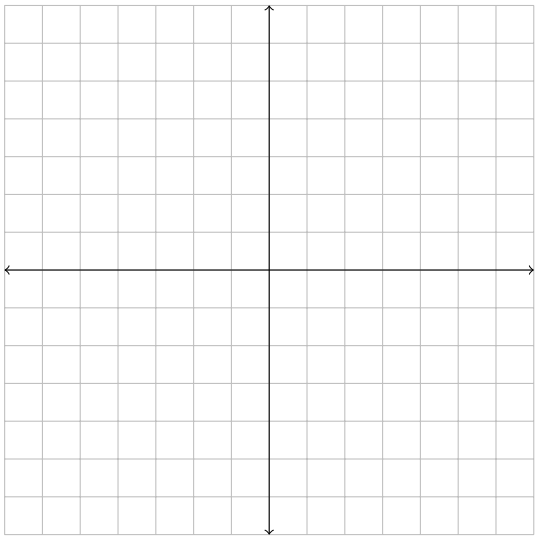
9. Sketch the graph of the following equation in the space provided.

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



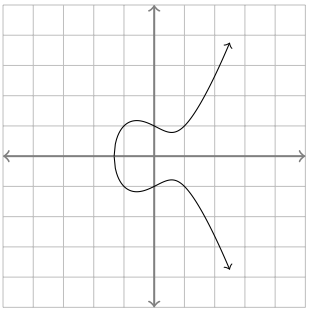
10. Sketch the graph of the following equation in the space provided.

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

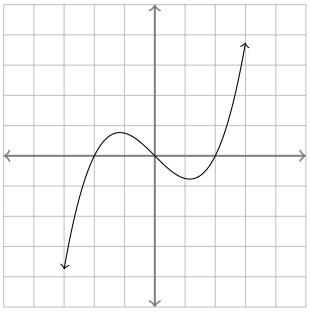


11. Graphically transform the following graph in the space provided.

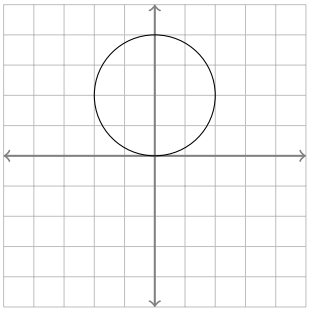
Shift left by 3 unit(s) and shift up by 2 unit(s).



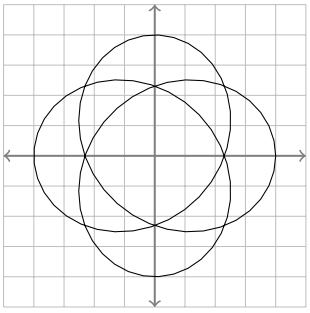
12. Determine whether or not the following graphs are symmetric across the x-axis, across the y-axis, or about the origin.



x-axis: yes/no
y-axis: yes/no
origin: yes/no



x-axis: yes/no
y-axis: yes/no
origin: yes/no



x-axis: yes/no
y-axis: yes/no
origin: yes/no

13. Determine whether or not the following equations are symmetric across the x-axis, across the y-axis, about the origin, or none of the three.

(a) $\dfrac{1}{x^2} + \dfrac{1}{y} = xy$

(b) $x^3 + y = 1$

(c) $y^3 - 1 = x^3 - 2$

14. Let $f(x) = x^2 + 1$ and $g(x) = 3x - 2$. Find the following.

(a) $(f \circ g)(2)$

(b) $(g \circ f)(2)$

(c) $(f \circ g)(x)$