**Directions:** Place your answer in the blank provided. For graphing questions, a set of axes are provided. All graphs must be labeled.

1. Simplify $\left(\frac{8}{9}\right)^{-1/2}$.

   _____

2. Write the slope intercept form (that is, the form: $y = mx + b$) of the equation of the line containing the point $(2,3)$ parallel to the line $6x + 2y = 7$.

   _____

3. Simplify the expression $\dfrac{3x^2y - 4x^3}{xy^2}$. Write your answer without negative exponents.

   _____

4. Use the graph of $f(x)$ below to estimate $f(3)$.

   _____
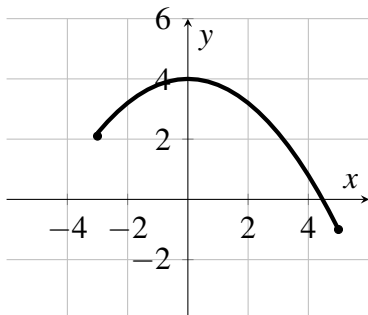
5. Simplify the rational expression: $\dfrac{x+y}{1+\frac{1}{y}}$.

   _____

6. Solve the equation $3x^2 - 2x - 1 = 0$.

  _____

7. Given the piecewise defined function below, determine the value(s) of x such that $f(x) = 3$.

$$f(x) = \begin{cases} x^2 & x \le 1 \\ x+3 & x > 1 \end{cases}.$$

  _____

8. Find the exact value of $\sin(2\pi/3)$.

  _____

9. Find the equation for the top half of the circle with center $(0,0)$ and radius 3.

  _____

10. For the function $f(x) = x^2$, find the expression $f(2) - f(2+h)$. Simplify your answer if possible.

  _____

11. Using the table of values for the function $f(x)$, determine $f^{-1}(2)$.

x	1	2	3	4	5	6	7	8	9	10
$f(x)$	0.5	1	1.7	1.9	2	4	4.5	5.1	6.7	10.8

12. Let $g(x) = 2x + 1$, find $(g \circ g)(x)$. You do not need to simplify your answer.
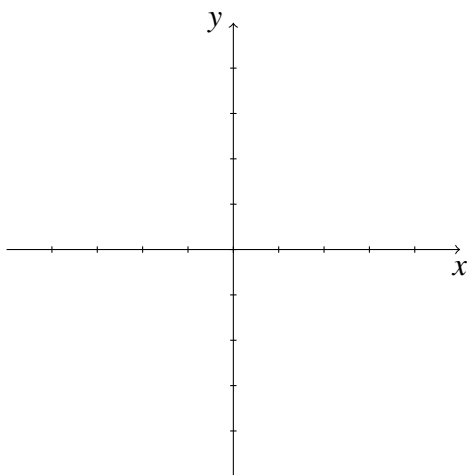
13. Solve for x in the equation $\ln(x^2 - 5) = 4$.

14. Determine the domain of $f(x) = \frac{1}{1 - \sqrt[3]{x}}$. Give your answer in interval notation
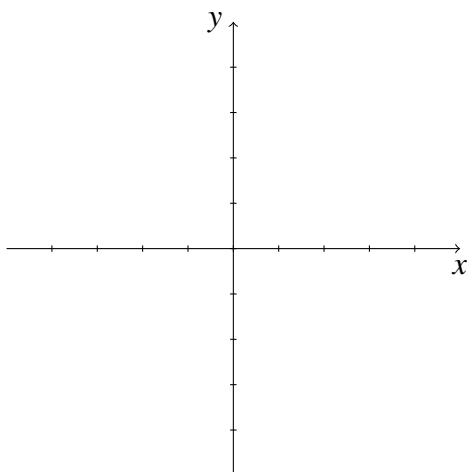
15. Solve the equation $0 = \tan x$.

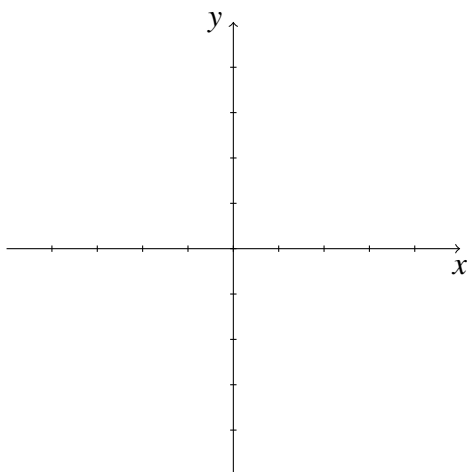16. Find the exact value of the expression $\log_{10}(25) + \log_{10}(4)$.

17. On the axes below, sketch the graph of $y = -\sqrt{x}$.

18. On the axes below, sketch the graph of $y = 2\sin(x) + 3$ on the interval $[-2\pi, 2\pi]$.

19. On the axes below, sketch the graph of $y = \ln(x - 1)$.

20. Solve the inequality $x^2 - 4 \geq 0$.