

**Directions:** The quiz contains 20 problems. Place your answer in the blank provided. For graphing questions, a set of axes are provided. All graphs must be labeled.

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

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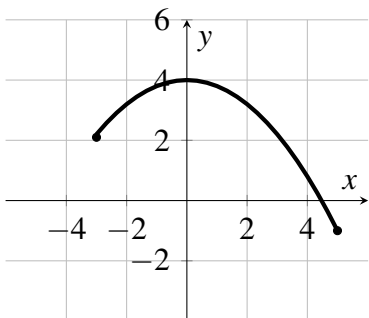
2. Write the slope intercept form (that is, the form:  $y = mx + b$ ) of the equation of the line containing the point  $(2, 3)$  parallel to the line  $6x + 2y = 7$ .

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

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



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

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

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

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

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

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

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

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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

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12. Let  $g(x) = 2x + 1$ , find  $(g \circ g)(x)$ . You do not need to simplify your answer.
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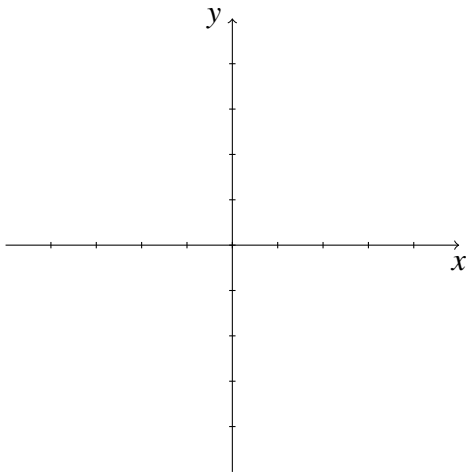
13. Solve for  $x$  in the equation  $\ln(x^2 - 5) = 4$ .
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14. Determine the domain of  $f(x) = \frac{1}{1 - \sqrt[3]{x}}$ . Give your answer in interval notation
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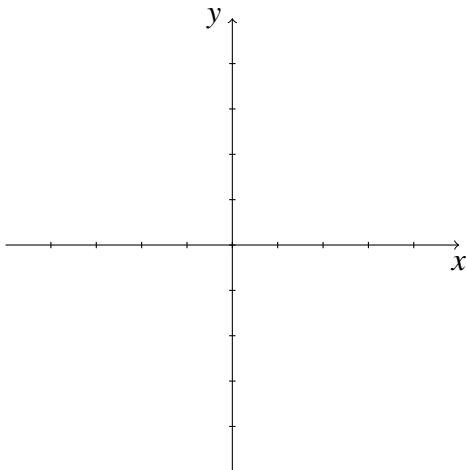
15. Solve the equation  $0 = \tan x$ .
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16. Find the exact value of the expression  $\log_{10}(25) + \log_{10}(4)$ .
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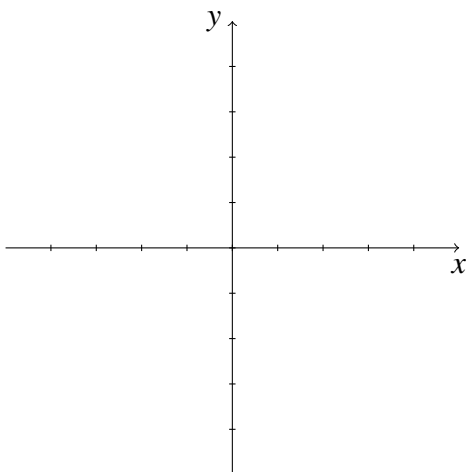
17. On the axes below, sketch the graph of  $y = -\sqrt{x}$ .



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  $x^2 - 4 \geq 0$ .