



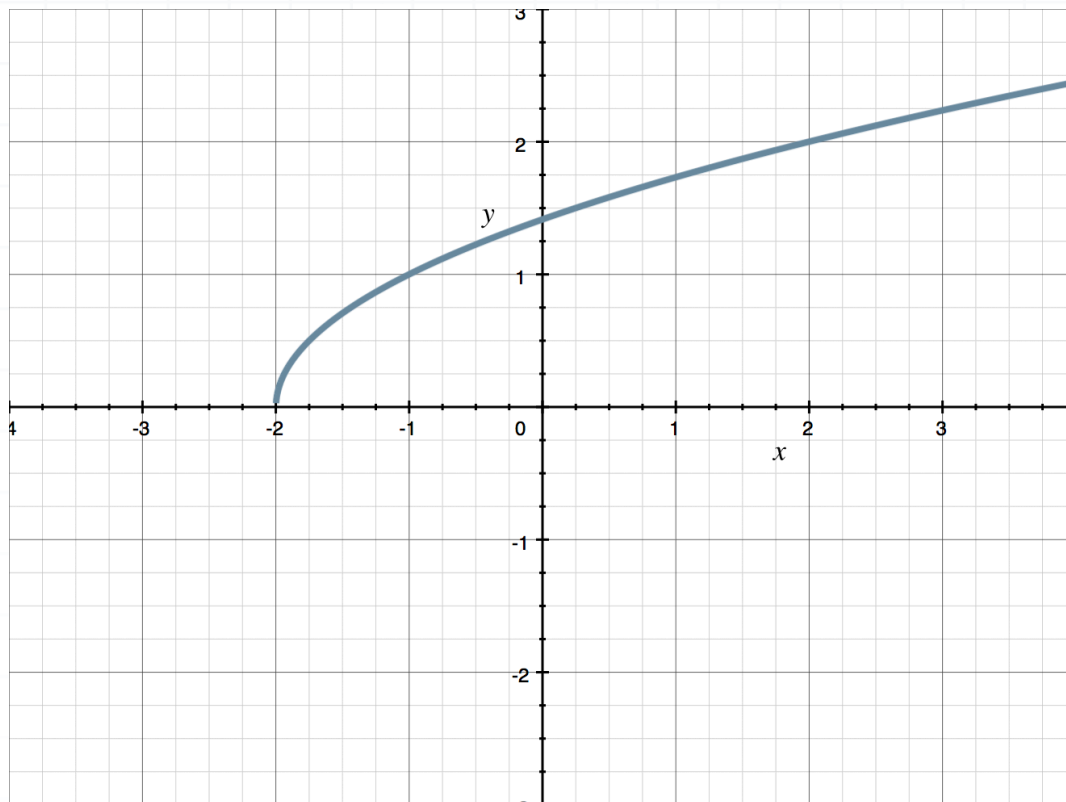
Calculus 1 Workbook

Inverse functions and logarithms

krista king
MATH

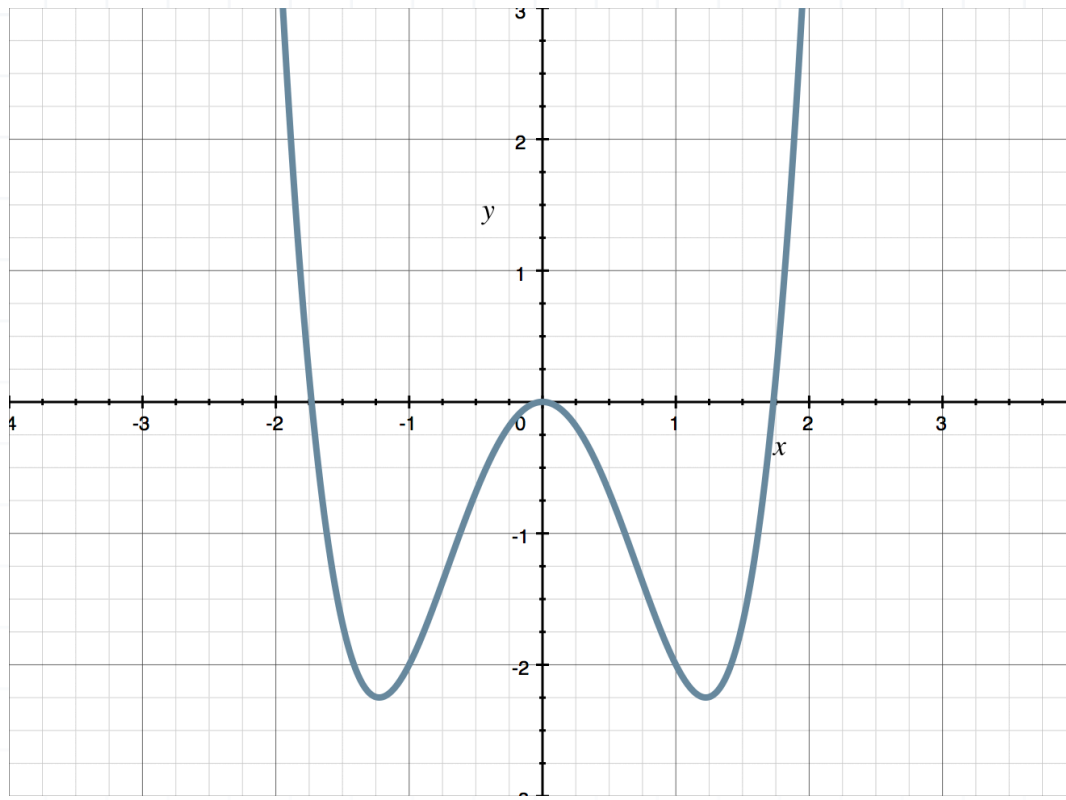
HORIZONTAL LINE TEST

■ 1. Does the graph represent a one-to-one function?

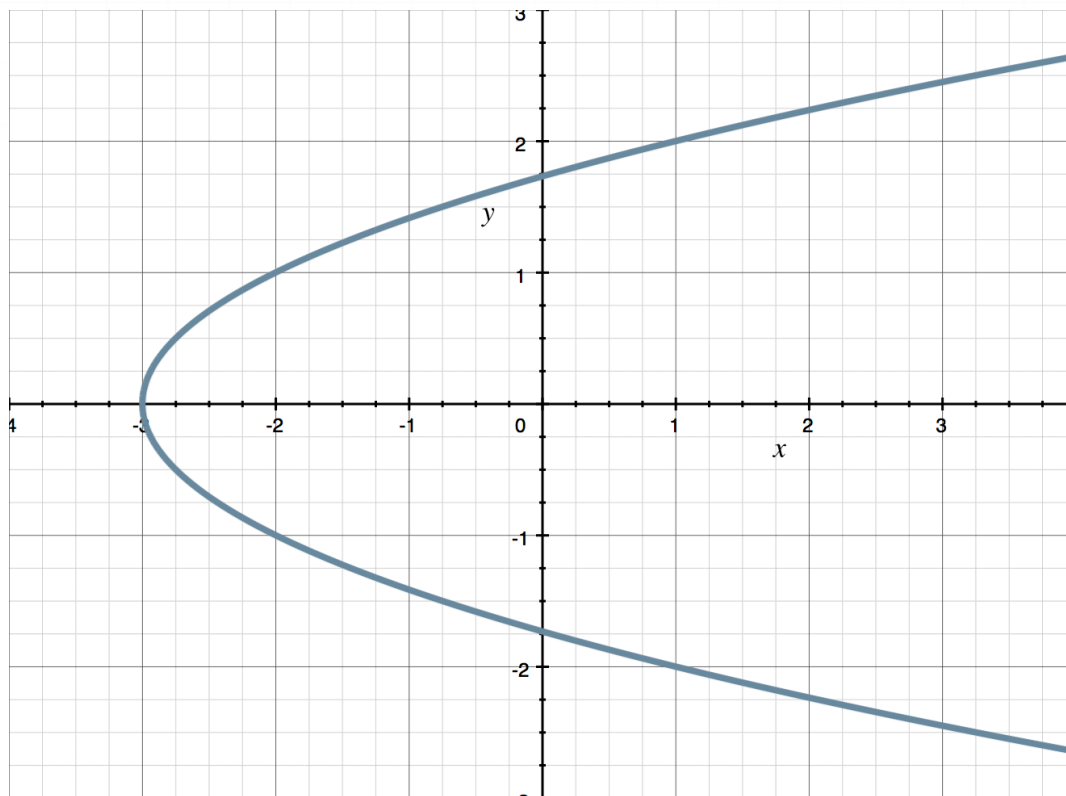


■ 2. Does the graph represent a one-to-one function?



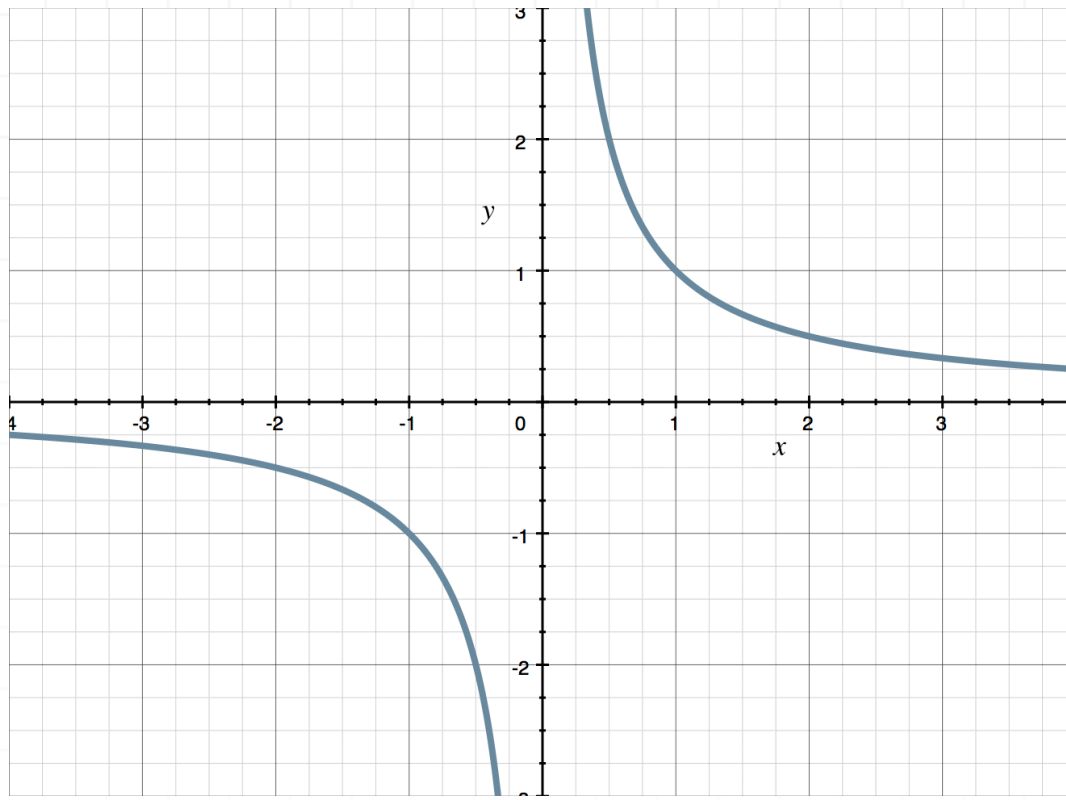


■ 3. Does the graph represent a one-to-one function?



■ 4. Does the graph represent a one-to-one function?





■ 5. Show that the function is one-to-one by showing that $f(a) = f(b)$ leads to $a = b$.

$$f(x) = 3x - 4$$

■ 6. Show that the function is one-to-one by showing that $f(a) = f(b)$ leads to $a = b$.

$$f(x) = \frac{x + 1}{x - 5}$$

■ 7. Show that the function is not one-to-one by showing that $f(a) = f(b)$ does not lead to $a = b$.

$$f(x) = x^2 - 6$$



■ 8. Show that the function is not one-to-one by showing that $f(a) = f(b)$ does not lead to $a = b$.

$$f(x) = (x + 3)(x - 2)$$



INVERSE FUNCTIONS

- 1. What is the inverse of the function?

$$f(x) = \frac{1}{2}x - 3$$

- 2. What is the inverse of the function?

$$f(x) = -4x + 5$$

- 3. What is the inverse of the function?

$$f(x) = \frac{x}{x+2}$$

- 4. What is the inverse of the function?

$$f(x) = \frac{2x}{x-5}$$

- 5. What is the inverse of the function?

$$f(x) = \frac{1}{x} + 3$$



■ 6. What is the inverse of the function?

$$f(x) = -\frac{3}{x-2} - 4$$

■ 7. What is the inverse of the function?

$$f(x) = \frac{x-2}{x+3}$$

■ 8. What is the inverse of the function?

$$f(x) = \frac{5+x}{4-x}$$



FINDING THE EQUATION OF A LINE FROM POINTS ON ITS INVERSE

- 1. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(1) = -2$$

$$f^{-1}(-3) = -1$$

- 2. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(0) = 3$$

$$f^{-1}(-2) = 1$$

- 3. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(2) = 5$$

$$f^{-1}(4) = 9$$

- 4. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(-3) = 2$$

$$f^{-1}(1) = 4$$



■ 5. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(-4) = 7$$

$$f^{-1}(-1) = 14$$

■ 6. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(5) = -4$$

$$f^{-1}(10) = -12$$

■ 7. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(-3) = -4$$

$$f^{-1}(3) = 12$$

■ 8. Find $f(x)$ if $f^{-1}(x)$ is a linear function.

$$f^{-1}(1) = 3$$

$$f^{-1}(2) = 6$$



LAWS OF LOGARITHMS

- 1. Write the expression as a single logarithm. Solve if possible.

$$\log_2 2 + \log_2 4$$

- 2. Write the expression as a single logarithm. Solve if possible.

$$\log_3 216 - \log_3 24$$

- 3. Write the expression as a single logarithm. Solve if possible.

$$\log_4 10 - 3 \log_4 2$$

- 4. Write the expression as a single logarithm. Solve if possible.

$$2 \log_7 4 + 3 \log_7 5$$

- 5. Solve the equation.

$$\log_a 2 + \log_a 4 = \log_a (x + 2)$$



■ 6. Solve the equation.

$$\log_4(x + 5) - \log_4(x - 2) = \log_4 3$$

■ 7. Solve the equation.

$$2 \log_b x = \log_b 49$$

■ 8. Solve the equation.

$$\log_{12} x = \frac{3}{2} \log_{12} 16$$



