

Complete as many of the following problems as you can. You do not have to go in order.

**Note: This classwork is optional**

- (1) Find an equation for the inverse function:  $f(x) = x^3 + 4$

**Solution**

$$\begin{aligned} f(x) = x^3 + 4 &\rightarrow y = x^3 + 4 \\ &\rightarrow x = y^3 + 4 \Leftrightarrow y = \sqrt[3]{x-4} \\ &\rightarrow \boxed{f^{-1}(x) = \sqrt[3]{x-4}} \end{aligned}$$

□

- (2) Find an equation for the inverse function:  $h(x) = (x+3)^5$

**Solution**

$$\begin{aligned} h(x) = (x+3)^5 &\rightarrow y = (x+3)^5 \\ &\rightarrow x = (y+3)^5 \Leftrightarrow \sqrt[5]{x} = y+3 \Leftrightarrow y = \sqrt[5]{x}-3 \\ &\rightarrow \boxed{h^{-1}(x) = \sqrt[5]{x}-3} \end{aligned}$$

□

- (3) Find an equation for the inverse function:  $f(x) = \frac{13}{x}$

**Solution**

$$\begin{aligned} f(x) = \frac{13}{x} &\rightarrow y = \frac{13}{x} \\ &\rightarrow x = \frac{13}{y} \Leftrightarrow y = \frac{13}{x} \\ &\rightarrow \boxed{f^{-1}(x) = \frac{13}{x}} \end{aligned}$$

□

- (4) Find an equation for the inverse function:  $f(x) = \frac{x^3 - 1}{4}$

**Solution**

$$\begin{aligned}f(x) &= \frac{x^3 - 1}{4} \rightarrow y = \frac{x^3 - 1}{4} \\&\rightarrow x = \frac{y^3 - 1}{4} \\&\Leftrightarrow 4x = y^3 - 1 \Leftrightarrow y = \sqrt[3]{4x + 1} \\&\rightarrow \boxed{f^{-1}(x) = \sqrt[3]{4x + 1}}\end{aligned}$$

□

- (5) Find an equation for the inverse function:  $f(x) = x^{1/4}$

**Solution**

$$\begin{aligned}f(x) &= x^{1/4} \rightarrow y = x^{1/4} \\&\rightarrow x = y^{1/4} \Leftrightarrow y = x^4 \\&\rightarrow \boxed{f^{-1}(x) = x^4}\end{aligned}$$

□

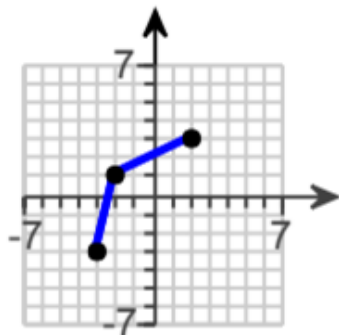
- (6) Find an equation for the inverse function:  $f(x) = \frac{x+1}{x-1}$

**Solution**

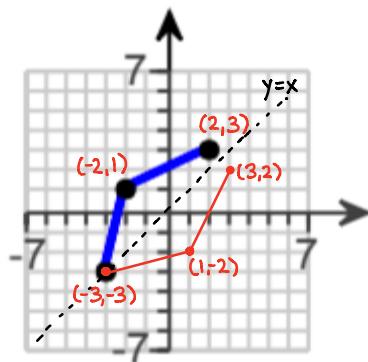
$$\begin{aligned}f(x) &= \frac{x+1}{x-1} \rightarrow y = \frac{x+1}{x-1} \\&\rightarrow x = \frac{y+1}{y-1} \\&\Leftrightarrow x(y-1) = y+1 \\&\Leftrightarrow xy - x = y+1 \\&\Leftrightarrow xy - y = x+1 \\&\Leftrightarrow y(x-1) = x+1 \\&\Leftrightarrow y = \frac{x+1}{x-1} \\&\rightarrow f^{-1}(x) = \frac{x+1}{x-1}\end{aligned}$$

□

(7) Use the graph below to draw a graph of its inverse function.



**Solution**



□