

Answer on Question #45784 – Math - Calculus

Find the inverse of the function: $f(x) = 8x^3 - 5$.

Solution:

We can work out the inverse using next steps:

- 1) The function: $f(x) = 8x^3 - 5$.
- 2) Put y for $f(x)$: $y = 8x^3 - 5$.
- 3) Switch the x and the y , because every (x, y) has a (y, x) partner:
$$x = 8y^3 - 5$$
- 4) Solve for y :

$$\begin{aligned} 8y^3 &= x + 5 \\ y^3 &= \frac{x + 5}{8} \\ y &= \sqrt[3]{\frac{x + 5}{8}} \\ y &= \frac{\sqrt[3]{x + 5}}{2} \end{aligned}$$

- 5) Stick in the inverse notation, $f^{-1}(x)$.

$$f^{-1}(x) = \frac{\sqrt[3]{x + 5}}{2}$$

Answer:

$$f^{-1}(x) = \frac{\sqrt[3]{x + 5}}{2}$$