

MAT 1320 DGD

Calculus I

Jules Mazur

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Given

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

Find the domain of $f(x)$.

- The function is undefined where the denominator $\neq 0$.
 - $1 - e^{1-x^2} = 0$ when $e^{1-x^2} = 1$, i.e. when $-x^2 + 1 = 0$
 - $\Delta = -4ac = -4 \times (-1) \times 1 = 4$
 - $\sqrt{\Delta} = 2$
 - $x_1 = \frac{-2}{-2} = 1$
 - $x_2 = \frac{-2}{-2} = -1$
- $D_{f(x)} =] - \infty, -1[\cup] 1, +\infty[$

The formula $C = \frac{5}{9}(F - 32)$, $F \geq -459.67$ expresses the Celsius temperature as a function of the Fahrenheit temperature. Find a formula for the inverse function and interpret it.

$$F = \left(\frac{9}{5}C\right) + 32$$

Find the formula for the inverse of the function

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

$$\begin{aligned} f^{-1}(x) &= x = \sqrt{2 + 3y} \\ f^{-1}(x) &= x^2 = 2 + 3y \\ f^{-1}(x) &= x^2 - 2 = 3y \\ f^{-1}(x) &= \frac{x^2 - 2}{3} = y \end{aligned}$$

This table shows the position of a cyclist. If f and g are continuous functions with $f(3) = 5$ and $\lim_{x \rightarrow 3} [2f(x) - g(x)] = 4$; $g(3) = ?$

Properties of the derivative

1.