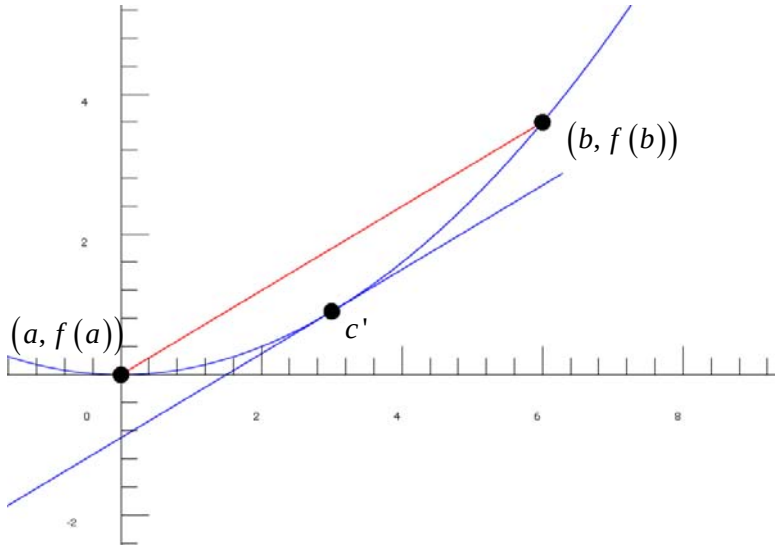
Mean Value Theorem

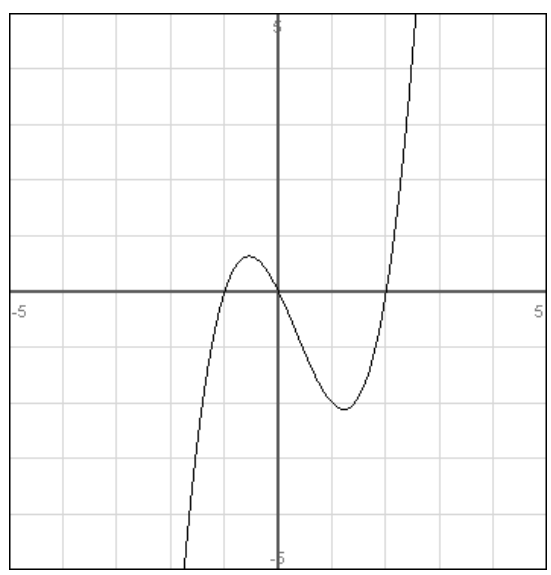
If a function is continuous on $[a,b]$ and differentiable on (a,b) then there exists a number c such that

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

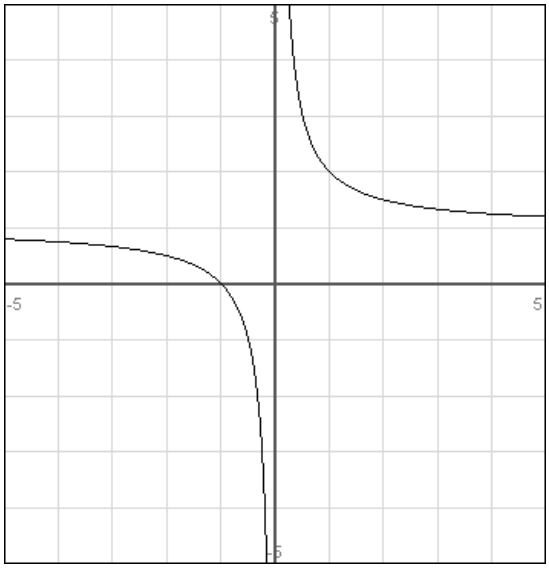


1. Find the value of c that satisfies the conclusion of the Mean Value Theorem for the given function on the given interval.

   a) $f(x) = x^3 - x^2 - 2x$ on the interval $(-1,1)$

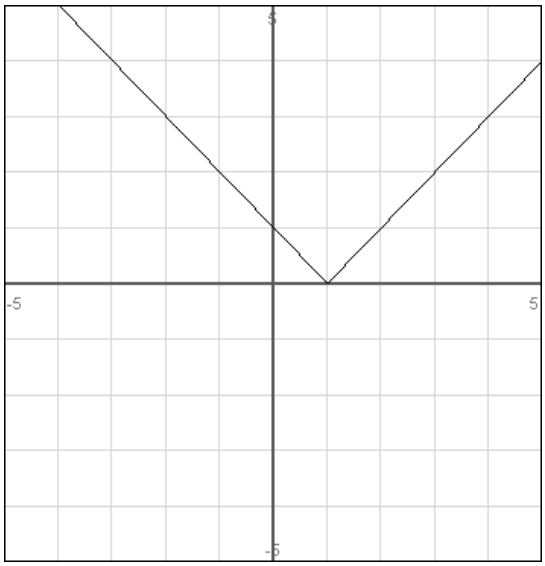


b) $f(x)=\dfrac{x+1}{x}$ on the interval $\left[\dfrac{1}{2},2\right]$

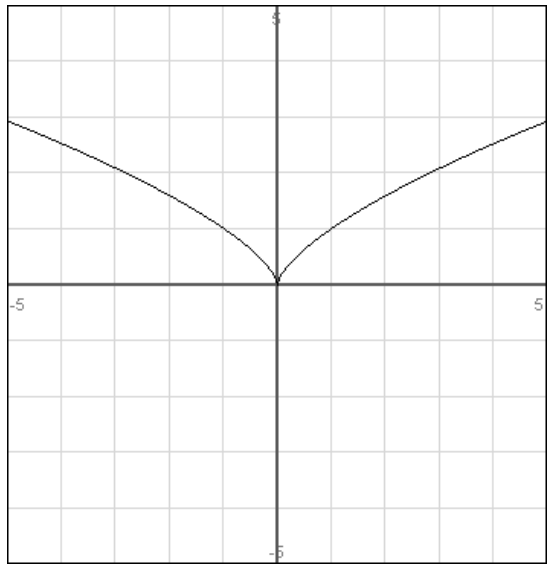


2. Determine if the Mean Value Theorem applies for the given function over the given interval.

a) $f(x)=|x-1|$ on $[-1,3]$



b) $f(x) = x^{\frac{2}{3}}$ on $[-1, 2]$



c) $f(x) = \dfrac{1}{x-2}$ on $[3, 5]$