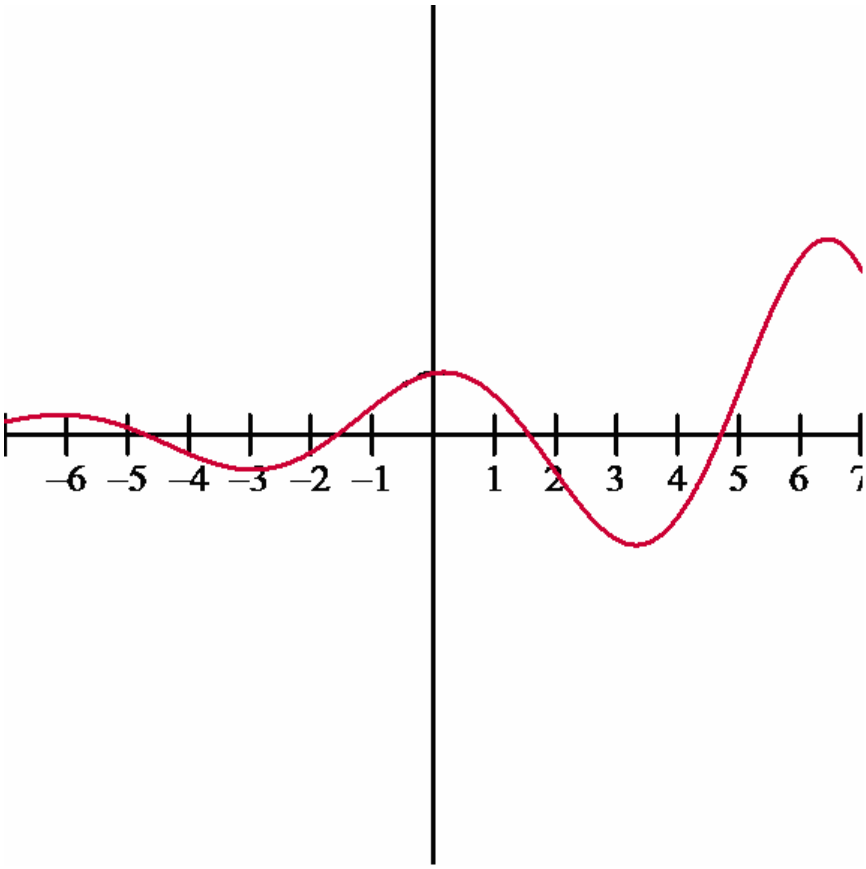
Using Newton's method to solve $f(x) = 0$ for the function shown below, find an approximate value of $x_2$ [a] if $x_0 = 4$, and [b] if $x_0 = 3$.

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Using Newton's method (without your calculator) to solve $x^2 - 2 = 3x$, find the value of $x_2$ [a] if $x_0 = 1$, and [b] if $x_0 = 2$.
**You must show all relevant values that were calculated.**

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Approximate $\tan^{-1}(-1.1)$ using a linear approximation.
**Your final answer may involve *e*, $\pi$ or radicals, but no trigonometric functions (regular or inverse).**

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Evaluate the following limits.

[a] $\lim_{x\to 0} \dfrac{x^2 e^x}{\cos 2x - \cos x}$

[b] $\lim_{x\to 1} \dfrac{x^4 - 3x^2 - x + 3}{x^3 - 3x^2 + 4}$

[c] $\lim_{x\to 0} x^2 \csc 3x$

[d] $\lim_{x\to 0+} \left(\dfrac{2}{x} - 1\right)^x$

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