Calc I in class problems

2025-09-05

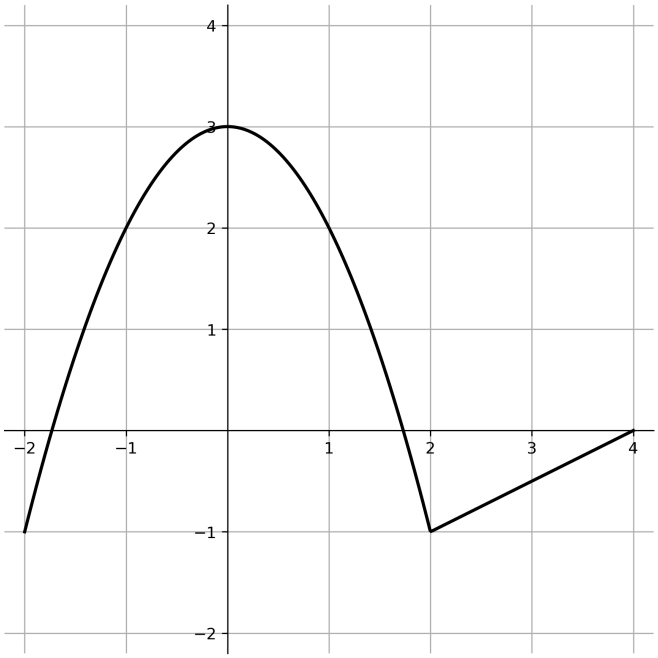
1. Let $f(x) = 2x^9 - 3x - 2$. Write a complete sentence referring to the intermediate value theorem that *proves* that f has a root in the interval $[0, 2]$.

2. Let $f(x) = 5x^2$. Write down the difference quotient

$$\frac{f(x+h) - f(x)}{h}$$

for this function. Then simplify the expression by expanding the numerator and performing any cancellations that you see.

3. The complete graph of a function f is shown on the reverse, together with a pair of axes below the graph. Draw the graph of the derivative f' of f on the lower set of axes.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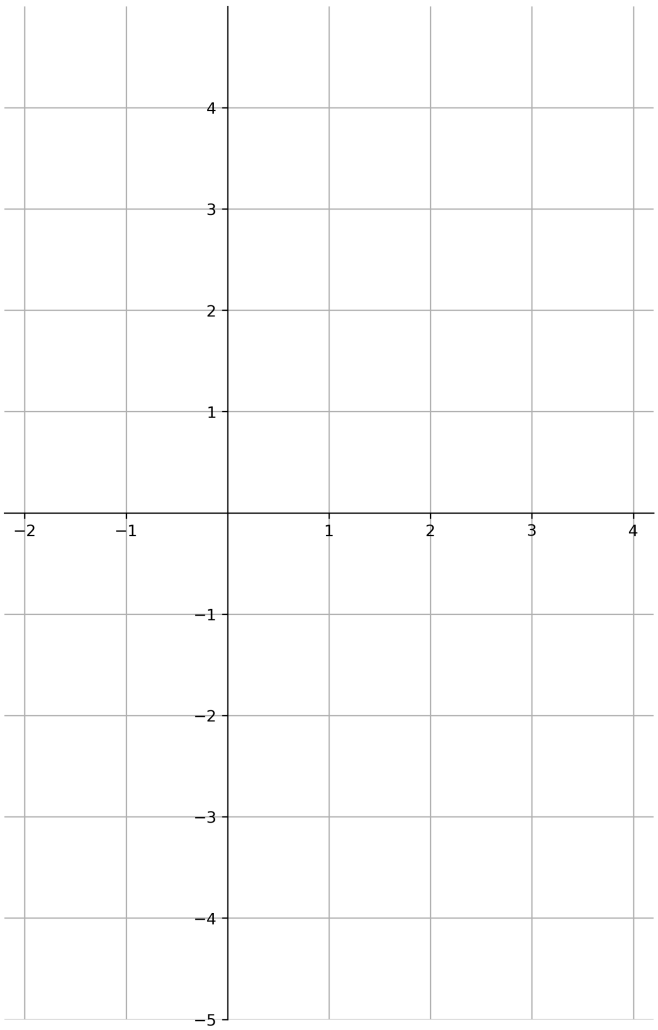
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