

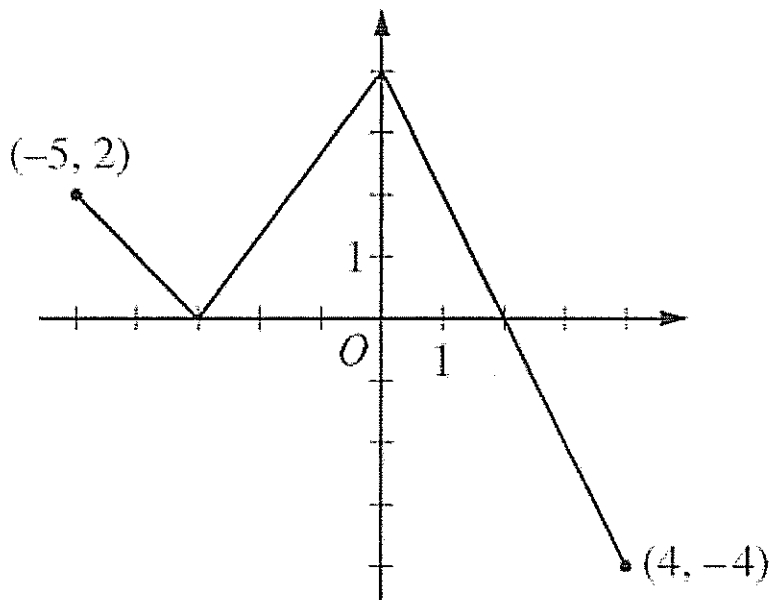
Analysis:

1. Given: $f(x) = \frac{\ln x}{x}$

- a) Find $f'(x)$ and $f''(x)$ algebraically. Simplify.
- b) Find the critical points of $f(x)$. Determine whether the critical point is minimum or maximum.
(No calculator)
- c) Find the equation of the tangent line at $x = e^3$.
- d) Find the x-coordinate of the inflection point.

2. Given: $f(x) = e^x \sin(x)$ and $0 \leq x \leq 2\pi$

- a) Find $f'(x)$ and $f''(x)$ algebraically. Simplify.
- b) Find the absolute maximum of $f(x)$ where $0 \leq x \leq 2\pi$.
- c) Find the x-coordinate of the inflection point.



3.

Graph of f

If $g(x) = \int_{-3}^x f(t) dt$, find:

Write f as a piecewise function and find the equation of g as a piecewise function.

Remember g is continuous and differentiable in $[-5, 4]$. \rightarrow Graph.

