

How do you approximate a derivative?

Same question as how do you approximate rate of change? (ROC)

$$f'(x) \approx \frac{\Delta y}{\Delta x} \approx \frac{f(x_2) - f(x_1)}{x_2 - x_1}$$

A derivative is a slope.

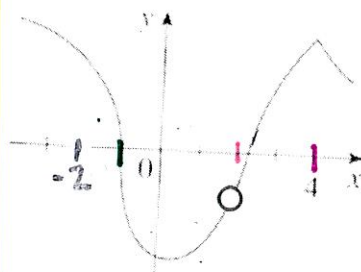
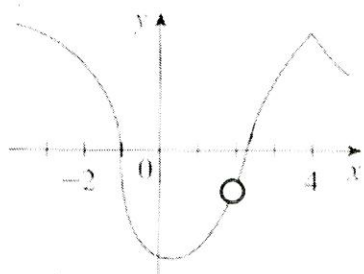
What three conditions make a function not differentiable?

1. If the function is discontinuous at a point.

2. If the function has a cusp, corner, or sharp turn.

3. If the function has a vertical tangent at the point.

Look at the graph. State where the graph is not differentiable and why.



$x = -1$
Because $f(x)$ has a vertical tangent

$x = 2$
Because $f(x)$ is not continuous at $x = 2$

$x = 4$
Because $f(x)$ has a corner

D1 - D3