Connecting What We Know about the Graphs of *f and f'*

Link 1:

Equation

Given the function:

$$f(x)=x^3-12x-5$$

Use the definition of derivative to determine f'(x).

$f'(x)=$

Graph

Using a different color for each function, graph both f and f' in a [-5,5] by [-25,25] window.

Table

x	*f(x)*	*f'(x)*
-4		
-3		
-2		
-1		
0		
1		
2		
3		
4		

Analysis

a. Find the zeros of ***f'***, what do you notice about the graph of ***f*** at these locations?

b. Identify the intervals where ***f*** is increasing, what do you notice about the graph of ***f'*** at these locations?

c. Identify the intervals where ***f*** is decreasing, what do you notice about the graph of ***f'*** at these locations?

d. Based on your answers above, what can you surmise about the behavior of ***f'***?

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Link 2:

Equation

Given the function:

$$f(x) = \left(x^2 - 3\right)e^x$$

Use the definition of derivative to determine f'(x).

$f'(x) =$

Graph

Using a different color for each function, graph both f and f' in a [-5,5] by [-8,5] window.

Table

x	*f(x)*	*f'(x)*
-3.0		
-2.0		
-1.5		
-1.0		
-.5		
0.0		
0.5		
1.0		
1.5		
2.0		
2.5		

Analysis

a. Find the zeros of ***f'***, what do you notice about the graph of ***f*** at these locations?

b. Identify the intervals where ***f*** is increasing, what do you notice about the graph of ***f'*** at these locations?

c. Identify the intervals where ***f*** is decreasing, what do you notice about the graph of ***f'*** at these locations?

d. Based on your answers above, what can you surmise about the behavior of ***f'***?