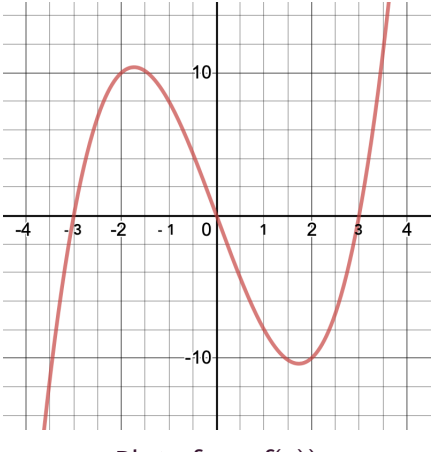
The derivative as a rate function

If $f(x)$ is a function, then the **derivative** of f is a new function f'.

The derivative is defined by $f'(x)$ is the *instantaneous rate of change* of f at x.



Plot of $y = f(x)$)

The derivative of f is positive at $x = 2.5$

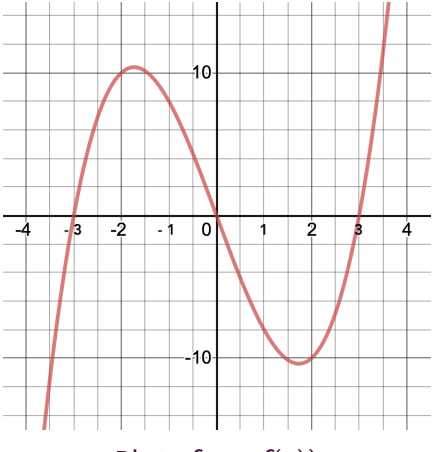
(a) True, and I can explain why

(b) True, but I am unsure why

(c) False, and I can explain why

(d) False, but I am unsure why

(e) Ummmm . . .



Plot of $y = f(x)$)

The derivative of f is negative at $x = -3$

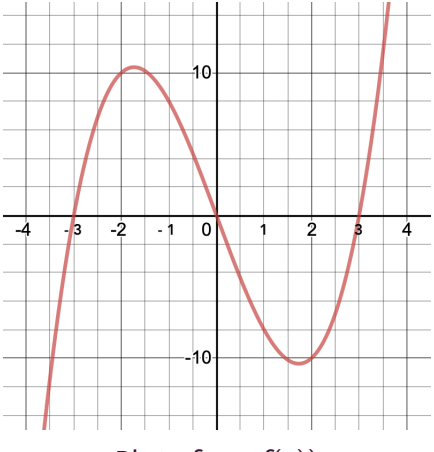
(a) True, and I can explain why

(b) True, but I am unsure why

(c) False, and I can explain why

(d) False, but I am unsure why

(e) Ummmm . . .



Plot of $y = f(x)$)

f' is zero three times on $-4 \leq x \leq 4$

(a) True, and I can explain why

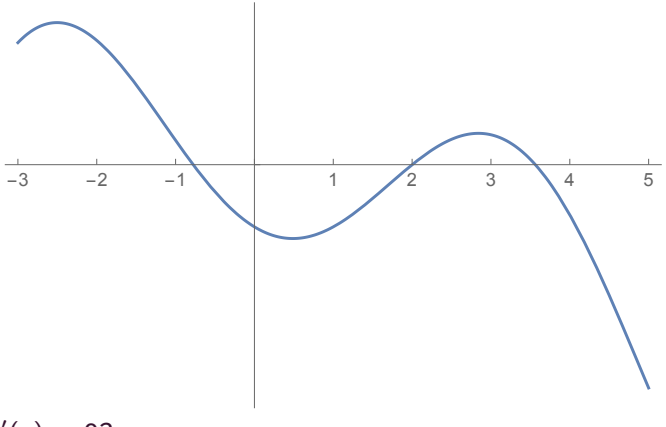
(b) True, but I am unsure why

(c) False, and I can explain why

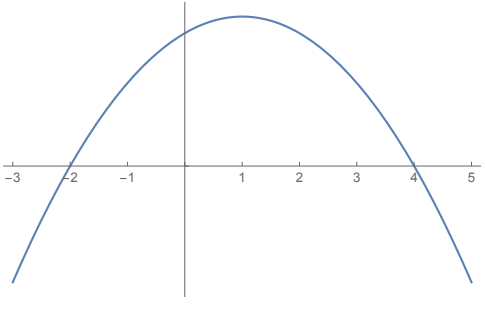
(d) False, but I am unsure why

(e) Ummmm . . .

The graph of $y = g(x)$ is show below



1. Where is $g'(x) = 0$?
2. On what intervals is $g(x)$ increasing? decreasing?
3. Use this information to *sketch* a graph of $y = g'(x)$



Graph of $y = h'(x)$

Notice this is the graph of the derivative, not of $h(x)$!

1. Where is $h(x)$ increasing? decreasing?
2. Sketch the graph of $y = h(x)$
3. Is the second derivative of $h(x)$ positive or negative at $x = 2$?
4. If $j(x) = h(x) + 3$, how is the graph of $y = j'(x)$ related to the graph of $y = h'(x)$?

Reminders

- PCA due Sunday @ midnight
- WeBWorK & WeBWorK journal due Monday @ midnight
- See you in person on Monday!