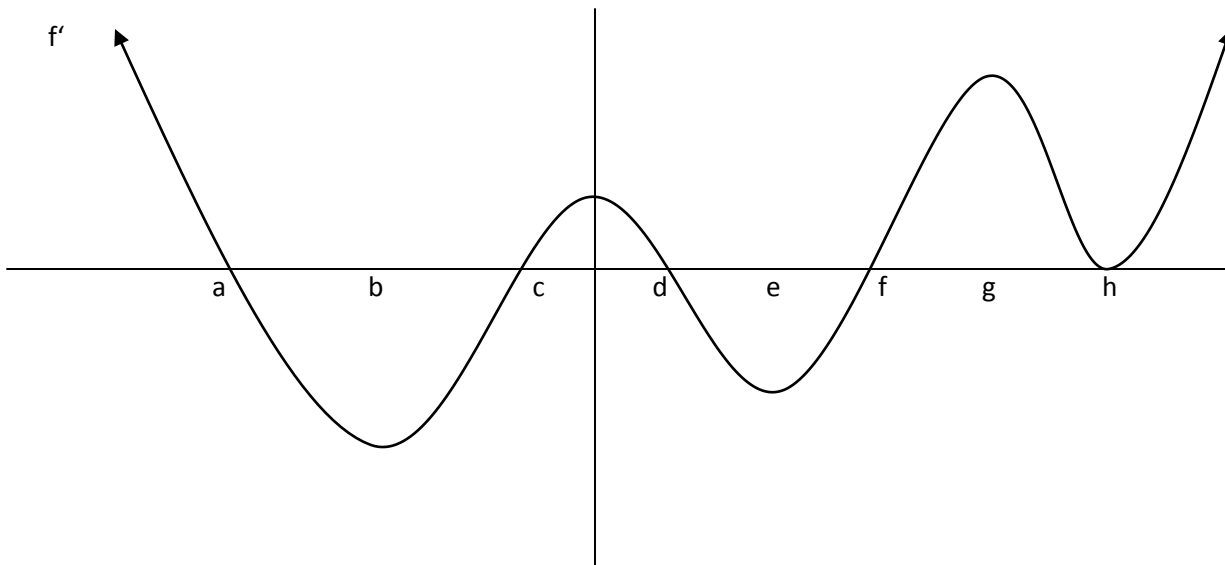


What does the first derivative graph tell us?

Name _____



What are the critical points for $f(x)$? a, c, d, f, h

Critical number are any x values where $f'(x) = 0$ or is undefined.

Where is $f(x)$ increasing? $(-\infty, a) \cup (c, d) \cup (f, h) \cup (h, \infty)$

$f(x)$ is increasing at any x values where $f'(x) > 0$.

Where is $f(x)$ decreasing? $(a, c) \cup (d, f)$

$f(x)$ is decreasing at any x values where $f'(x) < 0$

Identify the location of any relative maxima for $f(x)$. at $x = a$ and d

$f'(x)$ changes from positive to negative at these points.

Identify the location of any relative minima for $f(x)$. at $x = c$ and f

$f'(x)$ changes from negative to positive at these points.

Where is $f(x)$ concave up? $(b, 0) \cup (e, g) \cup (h, \infty)$

$f'(x)$ is increasing on these intervals.

Where is $f(x)$ concave down? $(-\infty, b) \cup (0, e) \cup (g, h)$

$f'(x)$ is decreasing on these intervals.

Identify the location of any points of inflection for $f(x)$. at $x = b, 0, e, g,$ and h

$f'(x)$ changes from increasing to decreasing or from decreasing to increasing at these points.