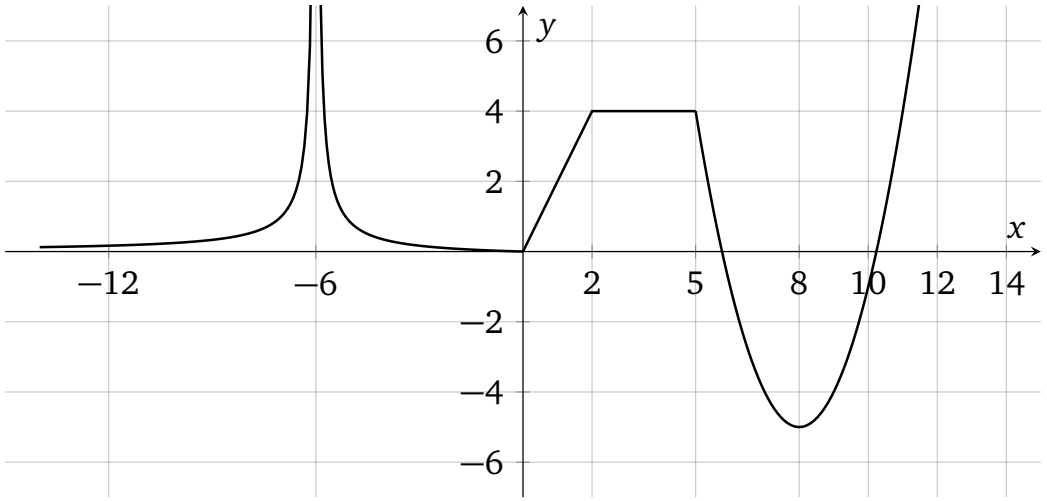
DERIVATIVE

TEXT: 1.9, 1.10

LAST NAME	FIRST NAME	DATE

1 (5 points). Use the graph of $f(x)$ to find



(a) all intervals where $f'(x)$ is positive

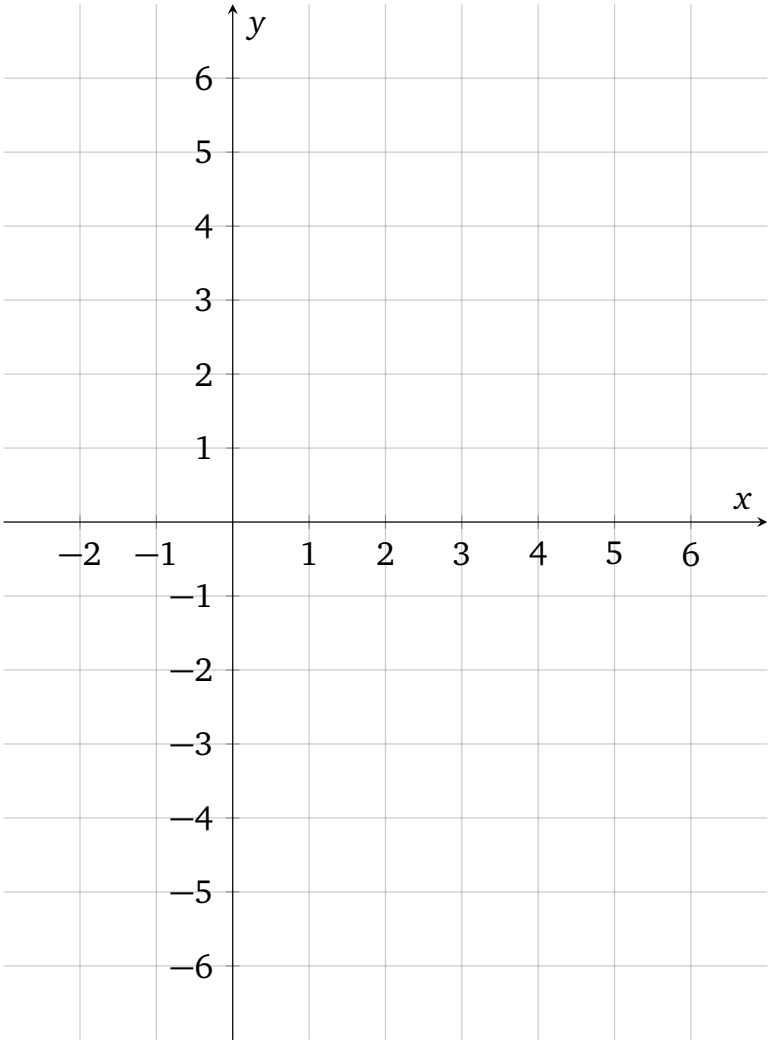
(b) all points/intervals where $f'(x) = 0$

(c) all intervals where $f'(x)$ is negative

(d) all points where $f'(x)$ is undefined

2 (5 points)**.** Sketch a graph of a function $g(x)$ with:

- $g(0) = g(2) = g(4) = 0$
- $g'(0) = g'(4) = 1$
- $g'(2) = -1$
- $g'(1) = g'(3) = 0$
- $\lim_{x \to \infty} g(x) = \infty$
- $\lim_{x \to -\infty} g(x) = -\infty$



3 (3 points). Use the limit definition of the derivative to find $f'(a)$ for $f(x) = 3x^2 - 4x + 1$.

4 (3 points). Use the limit definition of the derivative to find $f'(a)$ for $f(x) = \sqrt{1-2x}$.

5 (4 points)**.** Use the limit definition of the derivative to find $y'(-3)$ for $y(x) = x^{-2}$.
Find an equation of the line tangent to the graph of $y(x)$ at the point $(-3, 1/9)$ and state it in point-slope form.