

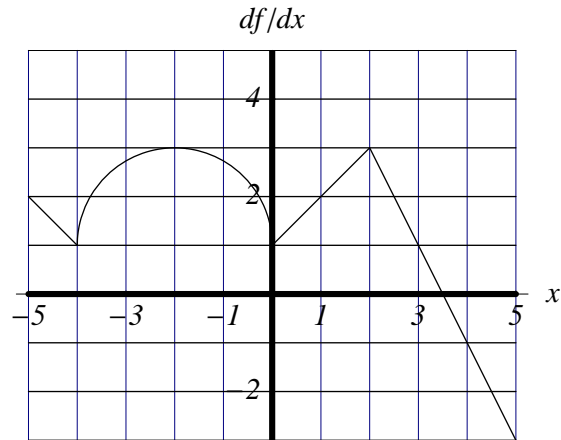
Math 1a. §2.9 Worksheet
What does f' say about f ?

Fall 2005

1. Assume that f is a continuous function on the closed interval $[-3, 3]$ with $f(-3) = 4$ and $f(3) = 1$. Also, assume that f' and f'' exist and are continuous on $(-3, 3)$. Use the information in the table below to sketch a possible graph of f .

x	$-3 \leq x < -1$	-1	$-1 < x < 0$	0	$0 < x < 1$	1	$1 < x \leq 3$
$f'(x)$	+	0	-	-	-	0	-
$f''(x)$	-	-	-	0	+	0	-

2. The graph of the *derivative* of a function f is shown below.



- (a) Where is f increasing and decreasing?
- (b) Where are the local maxima and minima of f ?
- (c) Where is f concave up and concave down?
- (d) Where are the inflection points of f ?
3. Let $f(x) = x^4 - 2x^2$.
- (a) Use the definition of the derivative to find $f'(x)$ and $f''(x)$.
- (b) On what intervals is f increasing or decreasing?
- (c) On what intervals is f concave up or concave down?