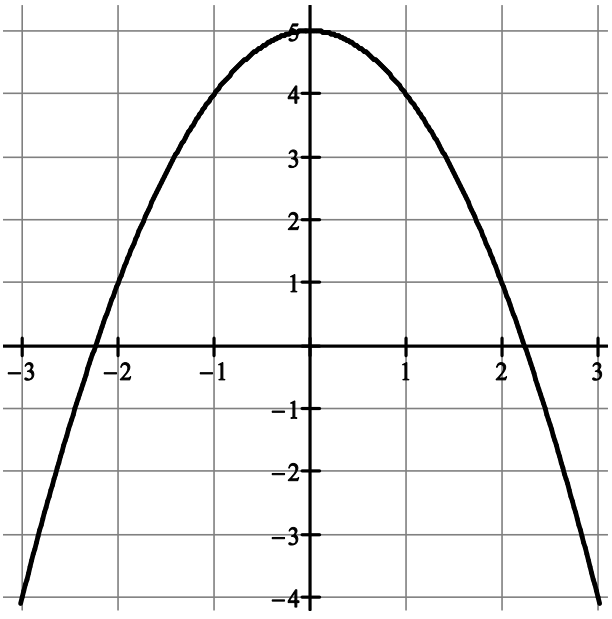
Derivatives worksheet (3.1-3.3 concepts)

1) Let $h(x) = f(x) \cdot g(x)$ and $j(x) = \dfrac{f(x)}{g(x)}$. Fill in the missing entries in the table below using the information about *f* and *g* given and the definitions of *h* and *j*.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$	$h'(x)$	$j'(x)$
-2	1	-1	-3	4		$\frac{-1}{9}$
-1	0	-2	1	1	-2	
0	-1	2	-2	1		

2) Suppose that $f(1) = 2$ and f' is the function shown below. Let $m(x) = x^3 \cdot f(x)$

Graph of f'



a) Is f(x) increasing or decreasing at x = -3?

b) Find the equation of the tangent line to f(x) at x = 1.

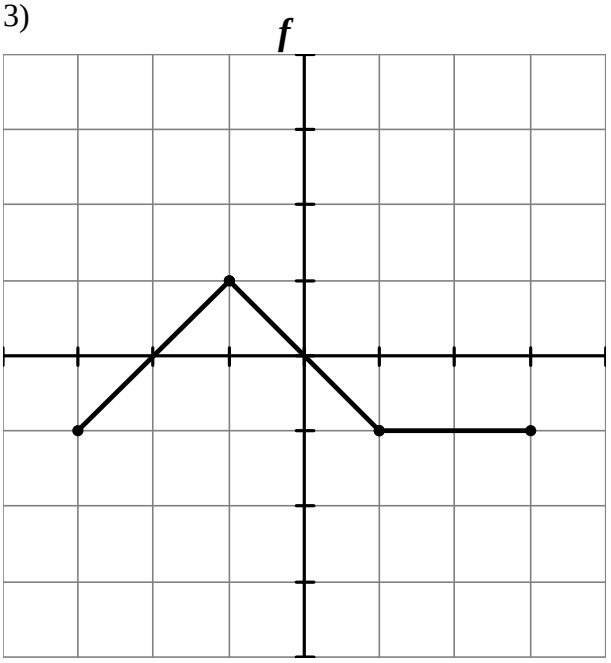
c) Evaluate $m'(1)$

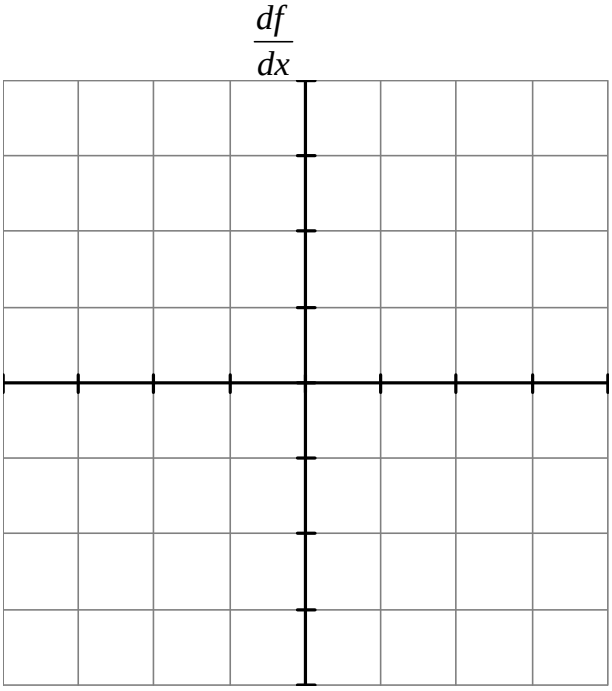
d) Show that m is increasing at 2

e) Estimate $f''(1)$

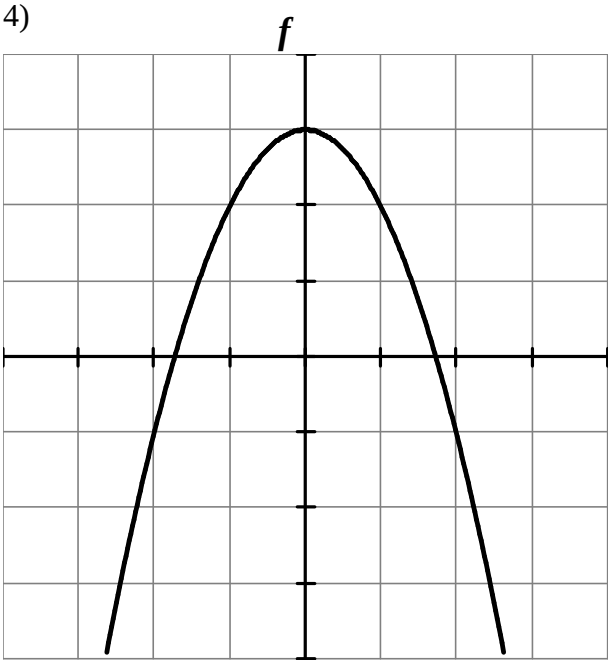
Given $f(x)$, sketch $\frac{df}{dx}$

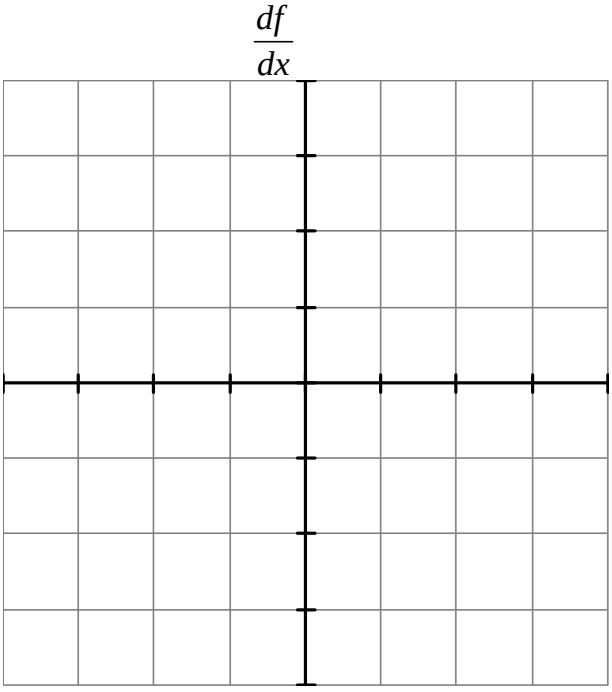
3)





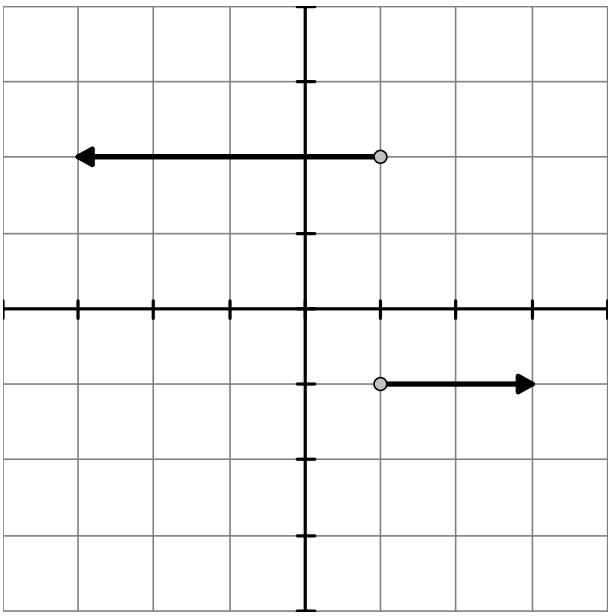
4)





5) Given f', sketch a possible graph for f

f'



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