

Calculus H
Review Ch. 3 (1-4, 8.2)

Name _____

1. Using the definition of derivative as a function in the $f(x+h)$ form, find an equation of the derivative for $f(x) = x^3 - 4x^2$.

2. Find an equation of the derivative for the following functions (You should NOT be using definition of derivative):

a. $f(x) = x^{2.4} - 3x^{-6} + 9$ _____

b. $f(x) = 6\sqrt[3]{x^2} - \frac{1}{x^4}$ _____

c. $f(x) = -\frac{7}{5}x^{\frac{10}{7}} + \frac{x^9}{9} + 2^{\frac{5}{2}}$ _____

d. $f(x) = (x-3)^3$ _____

3. Given $f(x) = x^2 - 7x + 13$, find the average rate of change of $f(x)$ with respect to x from $x = 5$ to 5.1 .

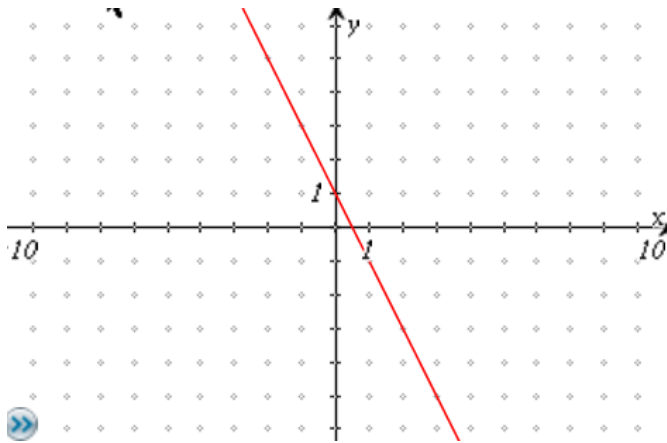
4. Find the derivative at $x = 5$ of $f(x) = x^2 - 7x + 13$ using the definition of derivative at a point.

5. Using #4, find an equation of the linear function containing the point $(5, f(5))$ and having slope $f'(5)$.

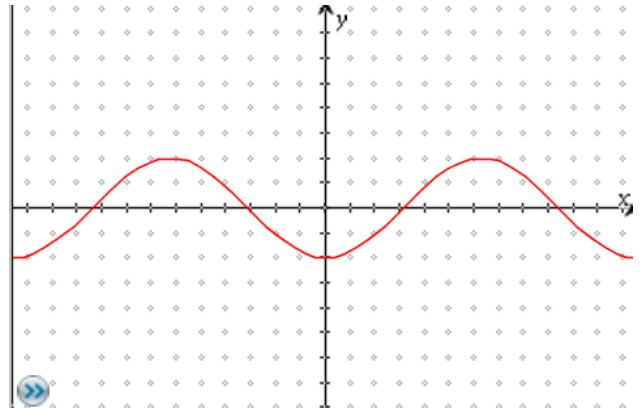
6. Given $f(x) = -6$, find the derivative at $x = 3$ using the definition of derivative at a point.

7. Sketch the graph of the derivative on the given graph.

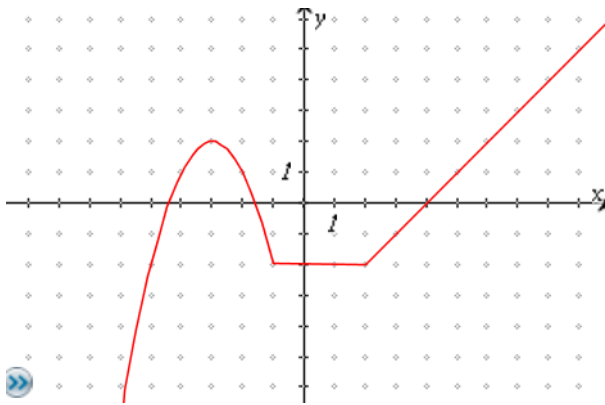
a.



b.



c.



8. Given: $f(x) = -\frac{1}{3}x^3 + 2x^2 - 1$, find the information below and sketch the graph.

$f'(x) = \underline{\hspace{2cm}}$ $f''(x) = \underline{\hspace{2cm}}$

Find interval(s) where $f(x)$ is increasing	
Find interval(s) where $f(x)$ is decreasing	
Find interval(s) where $f(x)$ is concave up	
Find interval(s) where $f(x)$ is concave down	
Local minimum(s) on $f(x)$	
Local maximum(s) on $f(x)$	
Point(s) of Inflection on $f(x)$	
y-intercept of $f(x)$	

Show your first derivative number line here:

Show your second derivative number line here:

