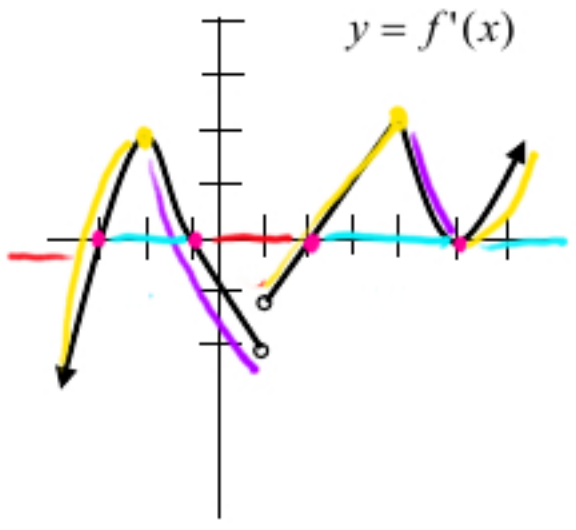
MATH 205 – Calculus I **SQ 4.3**

Name: Nathan Hallam Date: 10/28/2020

For the following questions, refer to the graph of $y = f'(x)$, the ***DERIVATIVE*** of $f(x)$, show below. The domain of $f(x)$ is all real numbers. Once again, this is the graph of the **DERIVATIVE!**



1. Find all critical points of the **original function** $f(x)$. $f'(x)=0$

Critical Points of $f(x)$ at $x=-3,-1,2,5$

2. Estimate the intervals over which the **original function** $f(x)$ is increasing.

$f(x)$ is increasing from $(-3,-1) \cup (2,5) \cup (5,\infty)$

3. Estimate the intervals over which the **original function** $f(x)$ is decreasing.

$f(x)$ is decreasing from $(-\infty,-3) \cup (-1,2)$

4. Estimate the intervals over which the **original function** $f(x)$ is concave up. $f''(x)>0$ $f'(x)$ pos

$f(x)$ is concave up from $(-\infty,-2) \cup (1,4) \cup (5,\infty)$

5. Estimate the intervals over which the **original function** $f(x)$ is concave down. $f''(x)<0$ $f'(x)$ neg

$f(x)$ is concave down from $(-2,1) \cup (4,5)$

6. Estimate the x-coord. of all local maximum points of the **original function** $f(x)$.

a local max occurs at $x=-1$ on $f(x)$

7. Estimate the x-coord. of all the local minimum points of the **original function** $f(x)$.

a local min occurs at $x=-3$ and $x=2$ on $f(x)$

8. Estimate the x-coordinates of all inflection points of the **original function** $f(x)$.

Inflection Points occur on $f(x)$ when $x=-2,1,4,5$