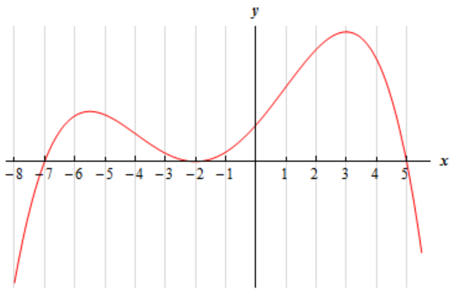
BC Calculus Classwork 3.3 – 3.4 (whole period)

1. Below is the graph of the **derivative** of a function. From this graph determine the open intervals in which the **function** increases and decreases.



2. This problem is about some function. All we know about the function is that it exists everywhere and we also know the information given below about the derivative of the function. Answer each of the following questions about this function.

(a) Identify the critical numbers of the function.
(b) Determine the open intervals on which the function increases and decreases.
(c) Classify the critical numbers as relative maximums, relative minimums or neither.

$f'(-5)=0 \qquad f'(-2)=0 \qquad f'(4)=0 \qquad f'(8)=0$

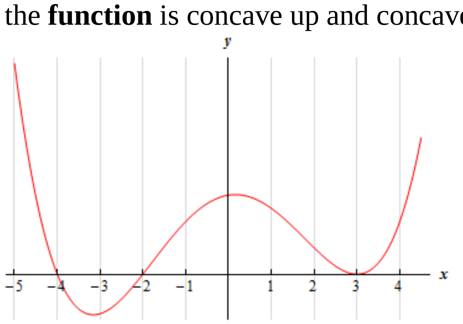
$f'(x)<0 \quad \text{on} \quad (-5,-2),\ (-2,4),\ (8,\infty) \qquad f'(x)>0 \quad \text{on} \quad (-\infty,-5),\ (4,8)$

For problems 3- 4 answer each of the following.
(a) Identify the critical numbers of the function.
(b) Determine the open intervals on which the function increases and decreases.
(c) Classify the critical numbers as relative maximums, relative minimums or neither.

3. $f(x)=50+40x^3-5x^4-4x^5$

4. $f(x)=\cos(3x)+2x \quad \text{on} \quad \left[-\frac{3}{2},2\right]$ (Calculator)

5. Below is the graph the **2nd derivative** of a function. From this graph determine the open intervals in which the **function** is concave up and concave down.



For problem 6 answer each of the following.
(a) Identify the critical points of the function.
(b) Determine the open intervals on which the function increases and decreases.
(c) Classify the critical points as relative maximums, relative minimums or neither.
(d) Determine the open intervals on which the function is concave up and concave down.
(e) Determine the inflection points of the function.
(f) Use the information from steps **(a)-(e)** to sketch the graph of the function.

6. $f(x)=x^5-5x^4+8$