MT 1800 Calculus I
Worksheet 2.5 B – The Derivative Functions

Summary of findings up to now:

	f(x)
f'(x) < 0	***Decreasing***
f'(x) > 0	***Increasing***
f''(x) < 0	***Concave down***
f''(x) > 0	***Concave up***

	f'(x)
f''(x) < 0	***Decreasing***
f''(x) > 0	***Increasing***

What do you think? (These questions will be explored in much more detail in the future)

What happens when f'(x)=0?

What happens to f(x) when f'(x) is undefined?

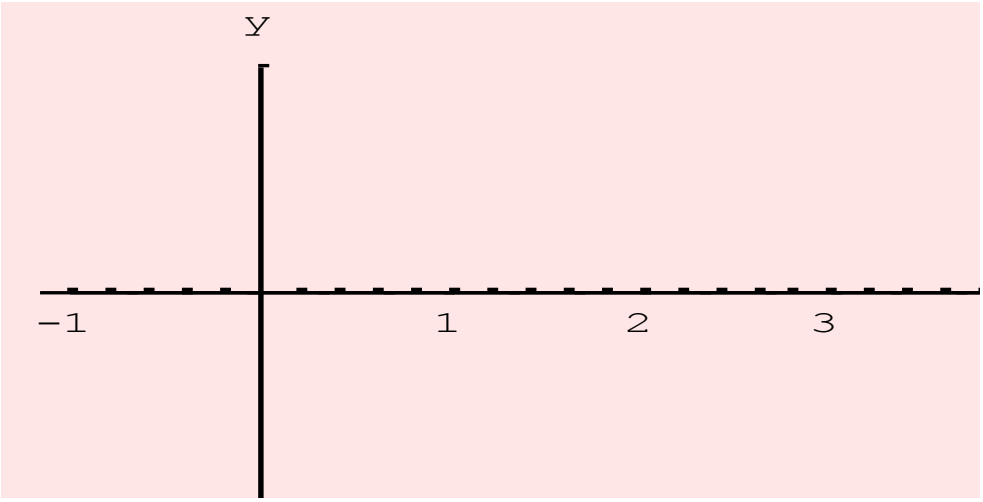
What happens to f''(x) when f'(x) is undefined?

What happens to f(x) when f''(x)=0?

What happens to f'(x) when f''(x)=0?

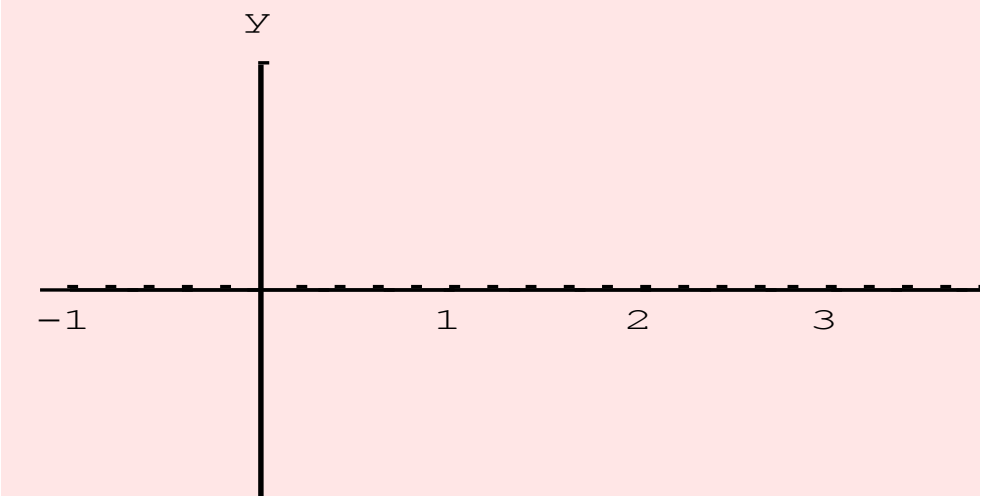
1. Sketch the graph of a continuous function that has the following characteristics:

x	(0,1)	1	(1,2)	2	(2,3)	3	(3,4)	4	5
f(x)	-	-	-	0	+	+	+	0	+
f'(x)	+	+	+	+	+	0	-	udef	+
f''(x)	-	0	+	0	-	-	-	udef	+

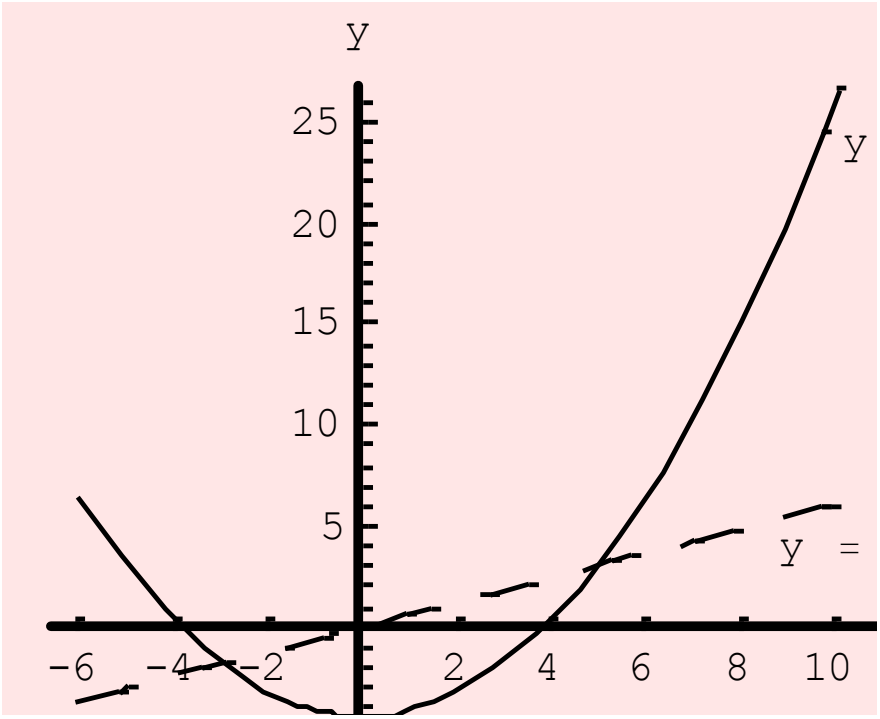


2. Sketch the graph of a continuous function that has the following characteristics:

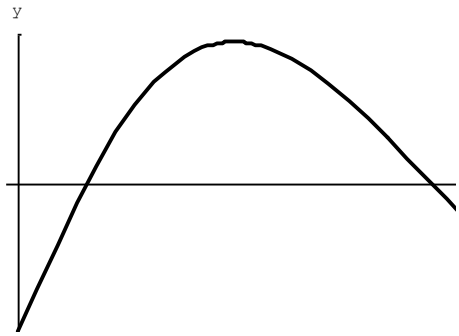
x	0	1	2	3	4	5
f(x)	-	-	-	-	0	+
f'(x)	+	0	-	0	+	+
f''(x)	-	-	0	+	+	+



3. On the grid below you are given the graph of both $f'(x)$ (drawn with a solid curve) and $f''(x)$ (drawn with a dotted curve). Use this information to sketch the graph of $f(x)$ on the same coordinate axes.



4. Shown below is the graph of the derivative function, $f'(x)$, for some function $f(x)$. Sketch the graph of the function $f(x)$ on the same set of axes.



5. Use the data in the table below to **estimate** the values of $f'(x)$ and $f''(x)$ for each value of x.

x	$f(x)$	$f'(x)$	$f''(x)$
1.2	**25**	-------	-------
1.4	**28**		
1.6	**33**		
1.8	**29**		
1.9	**24**		
2.0	**27**		