Honors Calculus – Quiz - Curve Sketching **Name:_____**

Fill in the blank. Use the word bank, answers may be used more than once.

WORD BANK- increasing, decreasing, positive, negative, zero, concave up, concave down, concavity, critical point, inflection point, max, min, undefined, horizontal line.

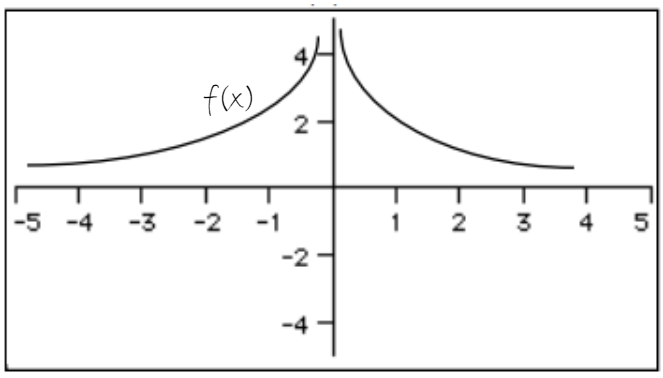
1. **If $f'(x)=0$ for all values of x, then f(x) is a _____.**
2. **$f''(x)$ is positive if f(x) is _____.**
3. **If $f'(x)$ is increasing, then $f''(x)$ is _____.**
4. **If f(x) is decreasing, then $f'(x)$ is _____.**
5. **If f(x) has an inflection point, then f(x) has a change in _____.**
6. **If f(x) is concave up, then $f'(x)$ is _____.**
7. **$f''(x)$ is positive if $f'(x)$ is _____.**
8. **If $f'(a)=0$, then f(x) has a _____ at _____.**

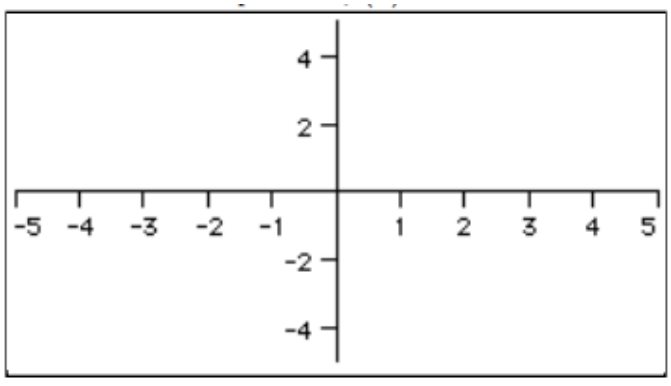
True or False.

9. **If f"(x) is negative then f(x) is concave up. _____**
10. **If f"(x) is equal to zero, and f'(x) is negative, then f(x) is decreasing. _____**
11. **If f(x) is concave down, then f'(x) is decreasing._____**
12. **If f'(x) changes from positive to negative, then f(x) has a relative min. _____**

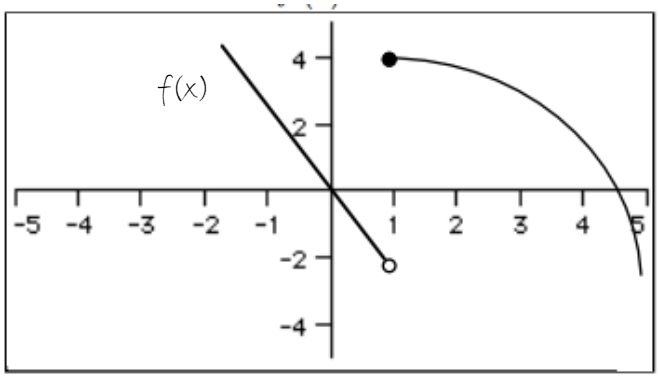
Sketch the derivative of each function.

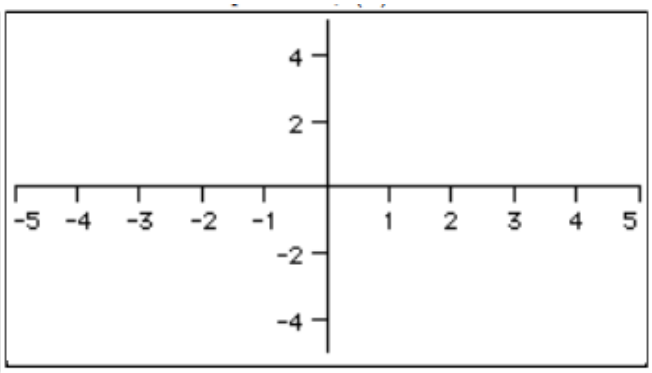
13.



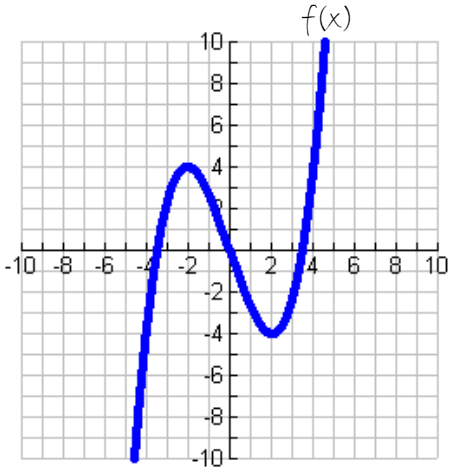


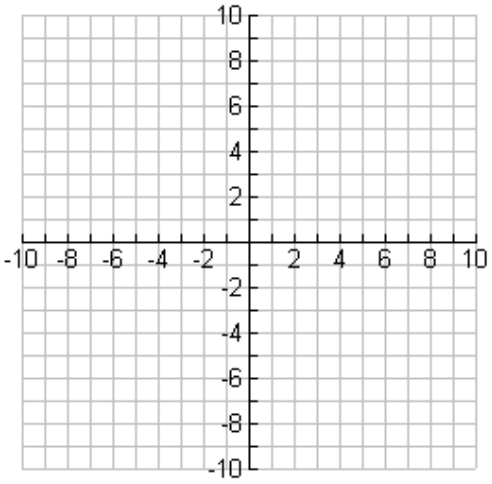
14.


f(x)
4
2
-2
-4
-5 -4 -3 -2 -1 1 2 3 4 5

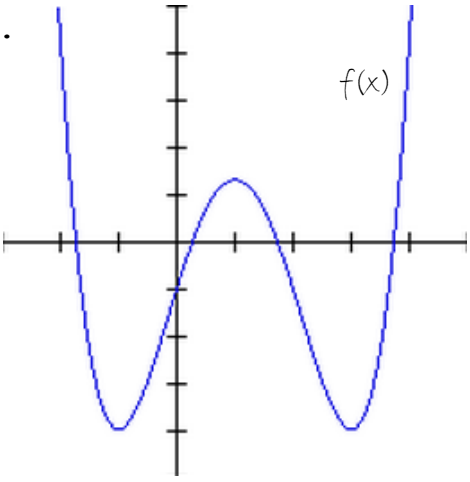

4
2
-2
-4
-5 -4 -3 -2 -1 1 2 3 4 5

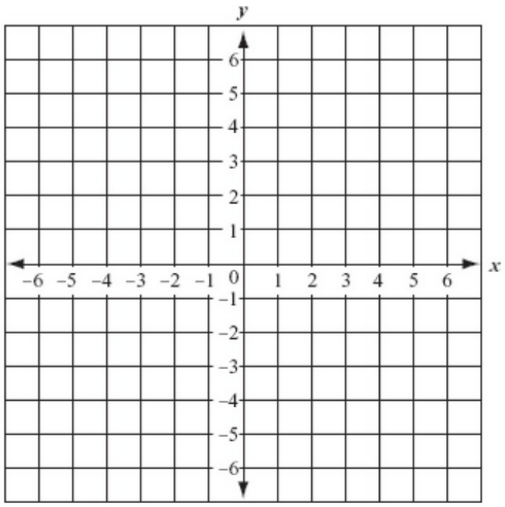
15.


f(x)
10
8
6
4
-2
-4
-6
-8
-10
-10 -8 -6 -4 -2 2 4 6 8 10


10
8
6
4
2
-2
-4
-6
-8
-10
-10 -8 -6 -4 -2 2 4 6 8 10

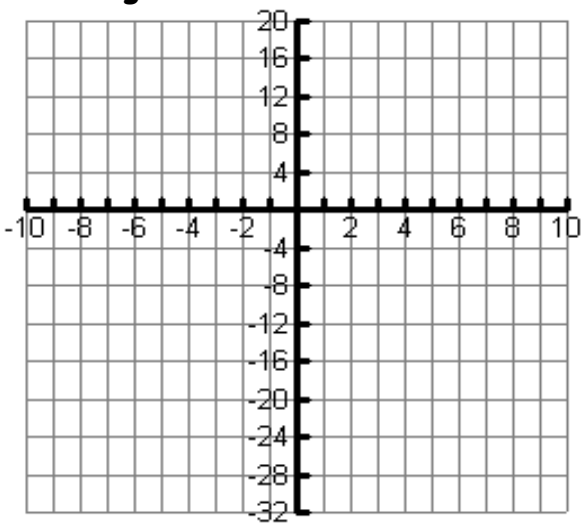
16.


f(x)

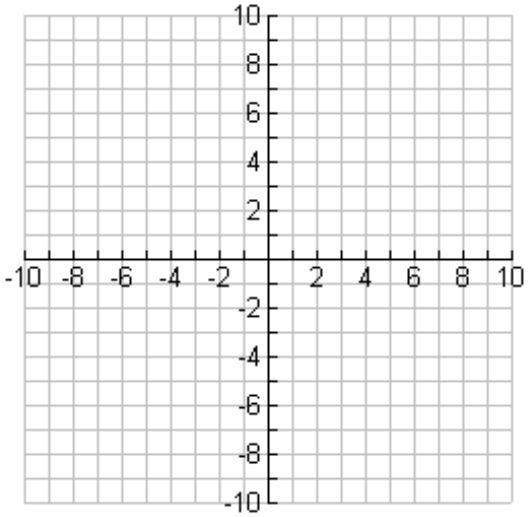

y
x
6
5
4
3
2
1
-1
-2
-3
-4
-5
-6
-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6

17-18. Sketch the graph of the function given the following:

#17.	F(x)	F'(x)	F"(x)
$-\infty < x < 1$		Negative	Positive
$x = 1$	-27	0	Positive
$1 < x < 2$		Positive	Positive
$x = 2$	-16	Positive	0
$2 < x < 4$		Positive	Negative
$x = 4$	0	0	0
$4 < x < \infty$		Positive	Positive



#18.	F(x)	F'(x)	F"(x)
$-\infty < x < -2$		Negative	Negative
$x = -2$	Undefined	Undefined	Undefined
$-2 < x < 0$		Negative	Positive
$x = 0$	4.5	0	Positive
$0 < x < 2$		Positive	Positive
$x = 2$	Undefined	Undefined	Undefined
$2 < x < \infty$		Positive	Negative



Bonus:+5 Draw the original function given the first derivative function. ALL OR NOTHING!!!