Math 105 C   Quiz 02 ver02 page 1   09/20/2013   Name suggested solnt

1. What does it mean to say that a is a *stationary point* for a function f? $\boxed{f'(a) = 0 \quad \text{(see note 1 below)}}$

2. Fact: if $f'(x) < 0$ on an interval (s, t), then on that interval $f(x)$ is $\boxed{\text{decreasing}}$.

3. If a is a stationary point of f, then a is a local maximum point if f' changes from $\boxed{\text{POSITIVE}}$ to $\boxed{\text{NEGATIVE}}$ at a. ← think "⌒" — f' is positive — f' is negative

(Possible answers might be "CU to CD" or "CD to CU" or "positive to negative" or "decreasing to increasing", etc).

4. An inflection point occurs at p if which function changes from increasing to decreasing at a: f, f', or f''? $\boxed{f'}$

5. Consider the following graph of the *derivative* of function $g(x)$; so you are given the graph of $g'(x)$ here. Answer the following questions.

(1) On what interval(s) is $g(x)$ decreasing? if g' is negative on I then g is decreasing there, so intervals are $(1,3)$ and $(3,5)$ (see note 2 below)

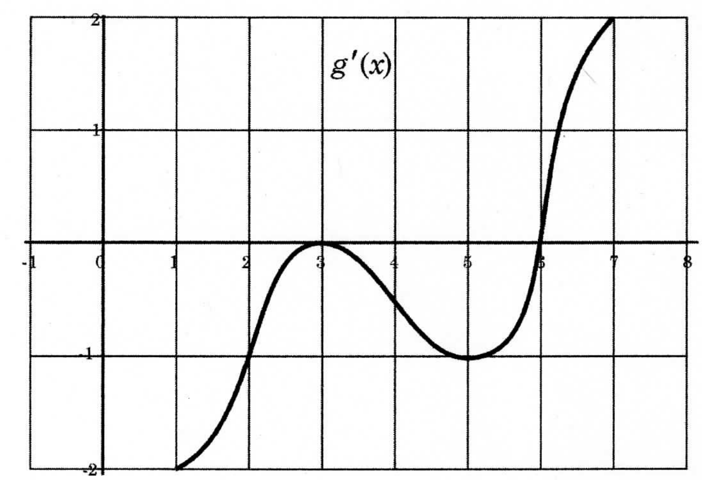
(2) What are the stationary points of $g(x)$? $g'(a) = 0$ at $a = 3$ and $a = 6$

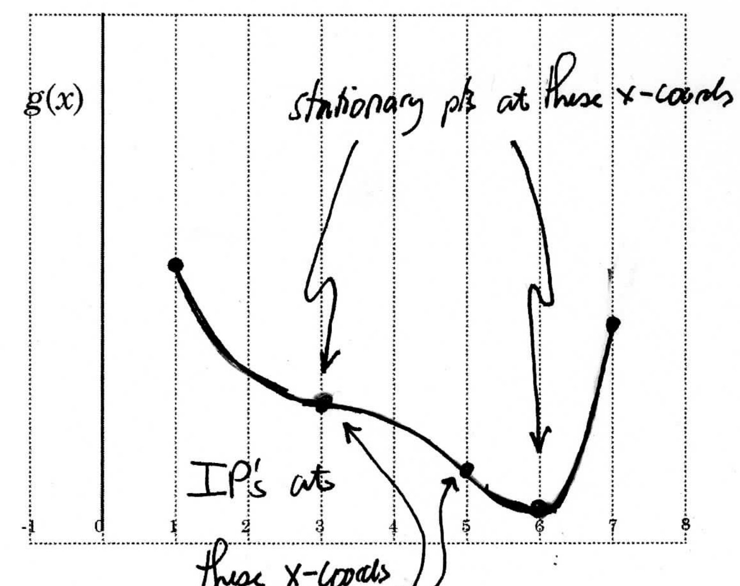
(3) On what interval(s) is $g(x)$ concave up? if g' is increasing on I then g is C.U. on I, so $(1,3)$ and $(5,7)$

(4) Does $g(x)$ have any local maximum points or minimum points? If so, list their x-coordinates and classify them (local min or local max). at $a = 6$, g' goes from negative to positive so g goes from decr. to incr. @ $a = 6$, hence there's a local min pt at $a = 6$

(5) Find all the inflection points of $g(x)$. at $a = 3$, g' changes from incr to decreasing, so g has an IP @ 3. Also at $a = 5$, g' changes from decr to incr so again, g changes concavity and $a = 5$ is also an IP.

(6) Make a rough sketch of g on the bottom graph starting at the dot given. Make sure it increases/decreases and is CD/CU where it should be; but you do not need to worry about the location of the x axis.





note 1: if you want to talk about tangent lines you need to say: "the slope of the line tangent to the graph of f at $(a, f(a))$ is 0"

note 2: we'll accept $(1,5)$ also.