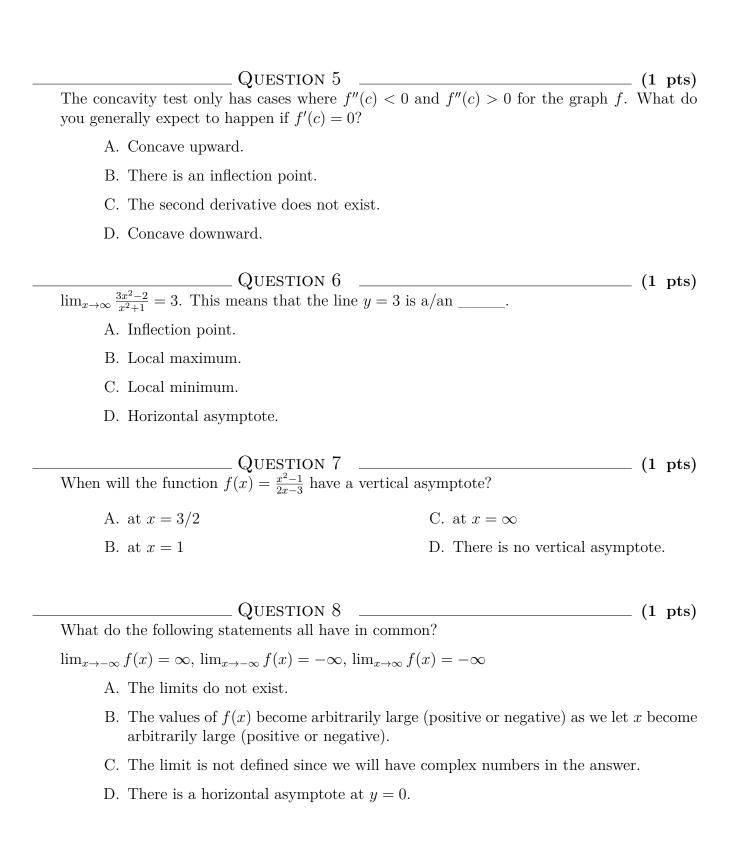
MATH-241 Calculus I Homework 9	Created by Rukiyah Walker Spring 2023
Question 1	(1 pts)
Fill in the blank:	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
If the graph of $f$ lies above all of its tangents of the graph of $f$ lies below all of its tangents of	
<ul><li>A. An inflection point.</li><li>A non-inflection point.</li></ul>	C. Concave upward. Concave downward.
B. Concave downward. Concave upward.	D. $f'$ exists. $f''$ exists.
Question 2	(1 pts)
Suppose we have a point $P$ on a curve $f(x)$ . If for $f$ ?	P is an inflection point, what does that mean
A. $f''$ is continuous.	
B. $f$ is continuous at $P$ and the curve characteristic ward (or concave downward to concave)	nanges from concave upward to concave downve upward).
C. $f'$ is continuous.	
D. The graph of $f$ is concave upward.	
Question 3	(1 pts)
Suppose we have a function $f$ . If the graph of $f$ does that tell us about $f''(x)$ ?	is concave downward on some interval $I$ , what
A. $f''(x) < 0$ for all $x$ in $I$ .	C. $f''(x) > 0$ for all $x$ in $I$ .
B. $f'(x) > 0$ for all $x$ in $I$ .	D. $f'(x) < 0$ for all $x$ in $I$ .
Question 4	(1 pts)
Suppose $f''$ is continuous near $c$ . Fill in the bla	nk:
If $f'(c) = 0$ and $f''(c) > 0$ , then If $f'(c)$	= 0  and  f''(c) < 0,  then
A. $f$ has an absolute minimum at $c$ . $f$ has an absolute maximum at $c$ .	C. $f$ has a local maximum at $c$ . $f$ has a local minimum at $c$ .
<ul><li>B. f is concave upward.</li><li>f is concave downward.</li></ul>	D. $f$ has a local minimum at $c$ . $f$ has a local maximum at $c$ .



(1 pts)

Let  $f(x) = \frac{1}{x^r}$ . When is  $\lim_{x\to\infty} f(x)$  not defined?

A. When  $x \leq 0$ .

C. When x goes to  $-\infty$ .

B. When x goes to  $\infty$ 

D. When  $r \leq 0$ .

\_\_\_\_\_ (1 pts)

Let  $f(x) = 1 + \frac{1}{x} + \frac{1}{x^2} - \frac{2}{x^3} + \frac{3}{x^5}$ . Evaluate  $\lim_{x \to \infty} f(x)$ .

A.  $\infty$ 

C. 1

B. 8

D. ∄