Name:	Exam 1	
Calculus 1 for Social Sciences	Name:	
Winter 2019		
Exam 1		Time Limit: 90 min

• DO NOT open the exam booklet until you are told to begin. You should write your name and section number at the top and read the instructions.

• Organize your work, in a reasonably neat and		
coherent way, in the space provided. If you		
wish for something to not be graded, please		
strike it out neatly. I will grade only work		
on the exam paper, unless you clearly indicate		
your desire for me to grade work on additional		
pages.		

•	Problem	Points	Score
,	1	12	
	2	11	
,	3	9	
	4	9	
	Total:	41	

- You needn't spend your time rewriting definitions or axioms on the exam.
- Show all your work. Correct answers without supporting work may not receive credit.
- When you have completed your test, hand it to me and have a great night.

1. (a) (4 points) Use the definition of the derivative to calculate the derivative of $f(x)=2x^2+1$

(b) (2 points) Evaluate f'(2)

(c) (4 points) Determine the equation of the tangent line to f(x) at x=2.

(d) (2 points) What are the x and y intercepts for the line?

2. Compute the derivatives of the following functions. Show all of your work.

(a) (3 points)
$$g(x) = 2x^2 - 3x^3$$

(b) (4 points)
$$h(x) = \frac{2x+1}{3x^2+1}$$

(c) (4 points)
$$f(x) = (x^2 + x + 1)(\sqrt{x} - x)$$

3. Evaluate the following limits

(a) (3 points)
$$\lim_{x \to \infty} \frac{4x^2 - 1}{x + 2} =$$

For
$$f(x) = \begin{cases} -x+2 & \text{if } x < 0 \\ x^2 - 1 & \text{if } x \ge 0 \end{cases}$$

(b) (3 points) $\lim_{x \to -1} f(x) =$

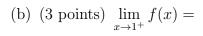
(c) (3 points)
$$\lim_{x\to 0} f(x) =$$

4. For the function

$$f(x) = \begin{cases} x+b & \text{if } x < 1\\ x^2 + 3 & \text{if } x \ge 1 \end{cases}$$

where a is a real number. Evaluate,

(a) (3 points)
$$\lim_{x \to 1^{-}} f(x) =$$



(c) (3 points) Find the value of a such that f(x) is continuous at x = 1