HOMEWORK ASSIGNMENT #1

due in class on Friday, September 13

Student No: _____ Name (Print): _____

Note: All homework assignments are due in class one week after being assigned. They must be on standard $8\frac{1}{2} \times 11$ size paper and they must be stapled. Assignments which are not stapled will not be accepted. I will not bring a stapler to class. Please enter your student number and name (as it appears on the registrar's list) in the spaces above. SURNAME FIRST IN CAPITALS, and given name second. Please put your answers in the boxes (if provided) and submit these pages for your assignment.

1. Compute the following limits:

(a) $\lim_{x \to -2} (x^3 - 3x^2 + 5)$

(b) $\lim_{x \to -1} \dfrac{(3x^2 + 2x + 1)^{10}}{(x^3 + 5)^5}$

(c) $\lim_{t \to 2} (-3t^3 - 4t + 5)^{1/3}$

(d) $\lim_{t \to 3} \dfrac{t^2 - 9}{t - 3}$

(e) $\lim_{t \to -3} \dfrac{t^3 - 9t}{t + 3}$

(f) $\lim_{z \to 9} \dfrac{3 - \sqrt{z}}{9 - z}$

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2. Find an equation of the tangent line of $y = f(x)$ at $x = a$ for the following:

(a) $y = x^2 + x,\ a = 2$

(b) $y = \dfrac{x+1}{x-1},\ a = 3$

(c) $y = \sqrt{x+1},\ a = 3$

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3. Evaluate the following limits:

(a) $\lim_{h \to 0} \dfrac{1}{h} \left(\dfrac{1}{\sqrt{1+h}} - 1 \right)$

(b) $\lim_{x \to 0} \dfrac{\sqrt{x+4}-2}{x}$

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4. A certain function $y = f(x)$ satisfies $f(1) = -1, f'(1) = 2$.

(a) Determine an equation for the tangent line at $x = 1$.

(b) Find the x and y intercepts of the tangent line.

(c) Graph the tangent line.