

GEEN 1340 - Test 1 –October 3, 2007

On the front of your blue book write: your name, your student ID and a grading table. Please work all of the problems on the exam and box answers if possible. A correct answer with no work will receive little if any credit, while an incorrect answer with some correct explanations and work will receive partial credit.

No notes, textbooks or calculators are allowed.

1. Please explain in your own words what is meant by:

- a) $|x - 1| > 7$ (then show on a number line what the set looks like)
- b) $\lim_{x \rightarrow 2} g(x) = -3$ (then draw a graph that shows any graph with that limit)

2. Sketch the following graphs (plot only essential points - use translations)

a) $x^2 + y^2 - 8x + 6y = 0$

b) $y = -\sin(2x)$

c) $f(x) = \begin{cases} 2+x & x > 3 \\ 0 & x = 3 \\ x^2 - 4 & x < 3 \end{cases}$

d) $y = |x^3 - 2|$

3. a) State the conditions under which a function would be continuous at $x = 5$.

b) Does the piecewise defined function in 2c have a limit at 3? Give reasons.

4. Find the following limits:

a) $\lim_{x \rightarrow 3} \frac{x^2 + 4}{x - 3}$

b) $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x^2 - x - 2}$

c) $\lim_{h \rightarrow 0} \frac{\frac{1}{(8+h)} - \frac{1}{8}}{h}$

d) $\lim_{x \rightarrow 2} \frac{x^2 + 1}{x^2 - 2}$

6. Solve the following:

a) $|2x - 3| \leq 5$

b) $\frac{3x - 4}{2} > \frac{x - 7}{7}$

c) $(x - 5)^2 < 36$

d) If $\lim_{x \rightarrow 0} \frac{4x}{12 - 3g(x)} = 20$, find $\lim_{x \rightarrow 0} g(x)$