Math 120 B, C - Autumn 2008
Mid-Term Exam Number One
October 16, 2008

Name: _____   Student ID no. : _____

Signature: _____   Section: _____

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1	10	
2	10	
3	10	
4	10	
Total	40	

- Complete all four questions.

- You may use a scientific calculator during this examination. Graphic calculators are not allowed. Also, other electronic devices are not allowed, and should be turned off and put away for the duration of the exam.

- If you use a trial-and-error or guess-and-check method, or read a numerical solution from a graph on your calculator when an algebraic method is available, you will not receive full credit.

- You may use one hand-written 8.5 by 11 inch page of notes. Write your name on your notesheet and turn it in with your exam.

- Show all work for full credit.

- You have 50 minutes to complete the exam.

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1. Jo went for a short run. She ran SOUTH at 3 meters per second for 90 seconds. She then turned and ran WEST at 4 meters per second for 124 meters. She then turned and ran SOUTH at 2.5 meters per second for 130 seconds.

   Express the (straight-line) distance from Jo to her starting point as a multipart function of t, the number of seconds she has been running.

2. Maria was swimming in the ocean. She swam from a point 80 meters EAST and 90 meters NORTH of a buoy directly to a point 100 meters SOUTH and 200 meters EAST of the buoy.

How close did she come to the buoy?

3. Alex and Barry are running with a taut (i.e., there is no slack) bungee cord between them.

   Alex runs in the direction indicated by the arrow at 3 ft/sec.

   Barry runs in the direction indicated by the arrow at 6 ft/sec.

   At time $t = 0$, Alex is 49 feet from point P, and Barry is 30 feet from point P.

   At what time t will the bungee cord hit the corner of the building?
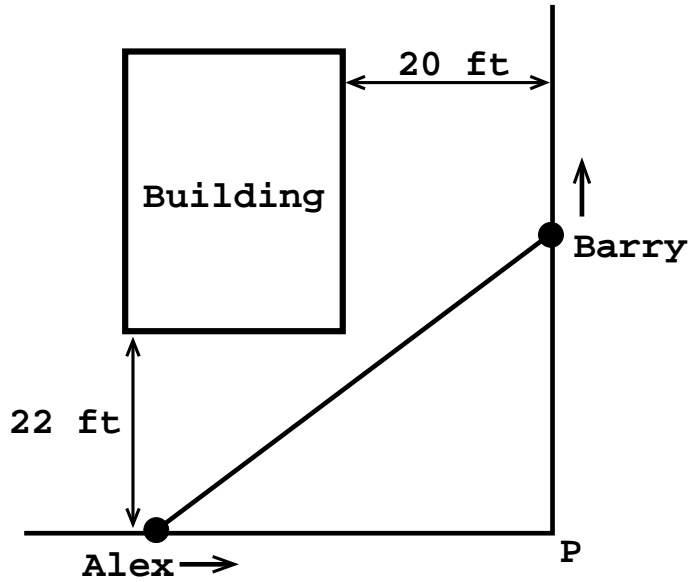
4. Let $g(x) = 2x^2 - 3x + 7$. Assume $m \neq 0$. Simplify the expression

$$\frac{g(a+m) - g(a-m)}{m}$$

as far as possible.