

Math 120 C - Autumn 2009
Mid-Term Exam Number One
October 22, 2009

Name: _____

Student ID no. : _____

Signature: _____

Section: _____

1	10	
2	10	
3	10	
4	10	
Total	40	

- Complete all four questions.
- You may use a scientific calculator during this examination. Graphing 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 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.

1. Pedro decides to go for a walk. He starts by walking NORTH for 3 hours at 2.5 miles per hour. Then he turns and walks SOUTH at 4 miles per hour for 1 hour. He then turns and walks WEST at 5 miles per hour for 2 hours.

Express the distance from Pedro to his starting point as a multi-part function of the time t since he started walking.

2. Lin is hiking near the Circular Forest, which has the shape of a perfect circle, 20 km in diameter. Lin starts her hike from a point 3 km SOUTH and 2 km EAST of the SOUTHERNMOST point of the forest. She then walks in a straight line to a point 4 km EAST and 6 KM NORTH of the NORTHERNMOST point of the forest.

(a) Lin hikes at a constant speed of 4 km per hour. How much time did she spend in the forest?

(b) On Lin's hike, where is she when she is closest to the EASTERNMOST point of the forest? You may give your answer in x - and y -coordinates in whatever coordinate system you use to solve the problem.

3. In the year 2000, Tim was 70 cm tall. In the year 2008, Tim was 110 cm tall.
In the year 1995, Yolanda was 50 cm tall. In the year 2002, Yolanda was 60 cm tall.
Assume that Yolanda and Tim both grow according to linear models.
When will Tim be twice as tall as Yolanda? Express your answer in years after 2000.

4. Hugo is walking in the xy -plane. He walks in a straight line at a constant speed. He begins from the point $(-2,-3)$ and heads directly toward the point $(4,1)$, reaching the x -axis after 5 seconds.

Express Hugo's x - and y -coordinates using parametric equations in t , the time since he left the point $(-2,-3)$.