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

There were two versions of the exam.

Version A - In problem 1, Pedro begins by walking north.

1. The distance function is

$$d(t) = \begin{cases} 2.5t & \text{if } 0 \le t \le 3 \\ 7.5 - 4(t-3) & \text{if } 3 \le t \le 4 \\ \sqrt{(-5(t-4))^2 + 3.5^2} & \text{if } 4 \le t \le 6 \end{cases}$$

2. (a) 4.787 hours; (b) With the origin at the center of the forest: x=2.9302, y=0.4876

3. 20.66667 years after 2000

4. $x = -2 + 0.9t, y = -3 + 0.6t$

Version B - In problem 1, Pedro begins by walking east.

1. The distance function is

$$d(t) = \begin{cases} 3.5t & \text{if } 0 \le t \le 3 \\ 10.5 - 4(t-3) & \text{if } 3 \le t \le 5 \\ \sqrt{2.5^2 + (2(t-5))^2} & \text{if } 5 \le t \le 12 \end{cases}$$

2. (a) 1.823 hours; (b) With the origin at the center of the forest: x=1.91329, y=1.06358

3. 7.63636 years after 2000

4. $x = -1 + \dfrac{3}{5}t, y = -2 + \dfrac{1}{2}t$