

Math 120 A - Spring 2013  
Mid-Term Exam Number One  
April 25, 2013  
Answers

There were two versions of the exam.

Version A: In problem 1, Veeree's house is 4 km north of Tom's.

1.  $\frac{17}{\sqrt{41}} + \frac{11}{\sqrt{41}} = 4.37286533\dots$  km

2.

$$\text{area} = \begin{cases} \frac{1}{2}x(4 + \frac{4}{3}x + 4) & \text{if } 0 \leq x \leq 3 \\ \frac{1}{2}(3)(8 + 4) + \frac{1}{2}(x - 3)(8 - \frac{8}{7}(x - 10)) & \text{if } 3 \leq x \leq 10 \end{cases}$$

3. 5.903575 km

4. (a)  $x = 2.5t, y = 5 + 0.25t$  (b)  $x = -3 + 6t, y = 4 - 2t$  (c) 0.476534 seconds

Version B: In problem 1, Veeree's house is 6 km east of Tom's house.

1. 8.2219219 km

2.

$$\text{area} = \begin{cases} \frac{1}{2}x(2 + \frac{3}{2}x + 2) & \text{if } 0 \leq x \leq 4 \\ \frac{1}{2}(4)(2 + 8) + \frac{1}{2}(x - 4)(8 - \frac{8}{5}(x - 9)) & \text{if } 4 \leq x \leq 9 \end{cases}$$

3. 15.11223 km

4. (a)  $x = -2 + \frac{5}{4}t, y = 5 - \frac{9}{4}t$  (b)  $x = -5 + \frac{5}{2}t, y = \frac{1}{2}t$  (c) 1.9178082 seconds