

Math 120 B - Autumn 2010  
Mid-Term Exam Number One  
October 21, 2010  
Answers

There were two versions of the exam.

Version A - In problem 1, Maria starts her walk from a point 13 km EAST of the transmitter.

1. 2.3036 hours

2.  $x = 3 - \frac{20}{27}t, y = -4 + \frac{5}{3}t$

3.

$$A(x) = \begin{cases} \frac{3}{8}x^2 & \text{if } 0 \leq x \leq 4, \\ \frac{7}{10}x^2 - \frac{13}{5}x + \frac{26}{5} & \text{if } 4 \leq x \leq 9. \end{cases}$$

4.  $f(x) = \frac{2}{3}x^2 + \frac{1}{3}x + 4$ , so  $f\left(\frac{1}{2}\right) = \frac{13}{3}$ .

Version B - In problem 1, Maris starts her walk from a point 3 km EAST of the transmitter.

1. 4.36133 hours

2.  $x = -4 + \frac{15}{16}t, y = -2 + \frac{3}{2}t$

3.

$$A(x) = \begin{cases} \frac{1}{7}x^2 & \text{if } 0 \leq x \leq 5, \\ \frac{9}{8}x^2 - \frac{55}{4}x + \frac{385}{8} & \text{if } 5 \leq x \leq 9. \end{cases}$$

4.  $f(x) = \frac{5}{6}x^2 - \frac{11}{6}x + 5$ , so  $f(2) = \frac{14}{3}$ .