

Math 120 A, B Winter 2013
Mid-Term Exam Number One
January 31, 2013
Answers

There were two versions of the exam.

Version A - In problem 1, Shin walks 2 km/hr.

1. (a) $3 + \sqrt{75}$ hours after starting. (b) $\frac{34}{3}$ hours after starting.

2. (a) 4.736113 km (b) $\frac{168}{65}$ km west of the center.

3.

$$\text{area} = \begin{cases} \frac{1}{2}x(18 - x) & \text{if } 0 \leq x \leq 4 \\ 28 + \frac{1}{2}(x - 4)(8 + \frac{1}{2}x) & \text{if } 4 \leq x \leq 10 \end{cases}$$

4. (a) $12x + 4$ (b) There are no solutions.

Version B - In problem 1, Shin walks 2.5 km/hr.

1. (a) $1 + \frac{\sqrt{48}}{3}$ hours after starting. (b) $\frac{25}{9}$ hours after starting.

2. (a) 6.6564023 km (b) $\frac{40}{13}$ km west of the center.

3.

$$\text{area} = \begin{cases} \frac{1}{2}x(18 - x) & \text{if } 0 \leq x \leq 4 \\ 28 + \frac{1}{2}(x - 4)(10 + \frac{1}{3}(x - 4)) & \text{if } 4 \leq x \leq 10 \end{cases}$$

4. (a) $8x - 2$ (b) $\frac{9}{4}$ is the only solution.