Math 120 A, B - Winter 2010
Mid-Term Exam Number One
January 28, 2010
Answers

There were two versions of the exam.

In version A, in problem 1, Aiman will reach the point (5,2) after walking for 2 hours.

1. (a) $x = 2.5t, y = t$ (b) $x = -3 + 3.6t, y = -4 + 2t$ (c) 1.38717 hours
2. 2.5298 km
3. $$f(x) = \begin{cases} 4 + \frac{5}{16}x & \text{if } 0 \le x \le 16 \\ 9 + \sqrt{25 - (x-21)^2} & \text{if } 16 \le x \le 21 \\ 14 - (x - 21) & \text{if } 21 \le x \le 29 \end{cases}$$
4. (a) The largest value is 14.08333, and the smallest value is -10. (b) The expression simplifies to $-12x - 10$.

In version B, in problem 1, Aiman will reach the point (4,6) after walking for 4 hours.

1. (a) $x = t, y = 1.5t$ (b) $x = -2 + 2t, y = 5 - 0.8t$ (c) 0.55262 hours
2. 4.64238 km
3. $$f(x) = \begin{cases} \frac{3}{8}x + 2 & \text{if } 0 \le x \le 8 \\ 5 + \sqrt{9 - (x-11)^2} & \text{if } 8 \le x \le 11 \\ 8 - (x - 11) & \text{if } 11 \le x \le 16 \end{cases}$$
4. (a) The largest value is 15.5 and the smallest value is -69. (b) The expression simplifies to $-8x - 12$.