Math 120 A, B Autumn 2012
Mid-Term Exam Number One
October 18, 2012
Answers

There were two versions of the exam.
Version A - In problem 1, the function's domain is $0 \leq x \leq 10$.

1. $$f(x) = \begin{cases} 6 - \sqrt{4 - (x-2)^2} & \text{if } 0 \leq x \leq 4, \\ -2(x-6) + 2 & \text{if } 4 \leq x \leq 6, \\ 2 + \sqrt{16 - (x-10)^2} & \text{if } 6 \leq x \leq 10 \end{cases}$$
2. (a) $x = \frac{15}{13}t, y = \frac{36}{13}t$ (b) $x = 5 - \frac{2}{3}t, y = -4 + 2t$
3. 2.068377 hours
4. 7.1922359 days from now

Version B - In problem 1, the function's domain is $0 \leq x \leq 5$.

1. $$f(x) = \begin{cases} 3 - \sqrt{1 - (x-1)^2} & \text{if } 0 \leq x \leq 2, \\ -2(x-2) + 3 & \text{if } 2 \leq x \leq 3, \\ 1 + \sqrt{4 - (x-5)^2} & \text{if } 3 \leq x \leq 5 \end{cases}$$
2. (a) $x = \frac{8}{5}t, y = \frac{6}{5}t$ (b) $x = 5 - \frac{5}{3}t, y = 6 - \frac{10}{9}t$
3. 3.6131983 hours
4. 8.6946976 days from now.