

Math 120 - Spring 2011
Final Exam
June 4, 2011
Answers

1. 3.6457 hours

2. (a) 20.42 seconds (b) $x = R \cos(-2.4763439676 + \frac{2\pi}{27}t)$, $y = R \sin(-2.4763439676 + \frac{2\pi}{27}t)$

3. (a) $V(t) = 10 \sin(\frac{2\pi}{8}(t - 3)) + 12$ (b) 4.5420068 hours

4.

$$\text{area} = \begin{cases} \frac{1}{2}x(21.8 - 0.778626x + 21.8) & \text{if } 0 \leq x \leq 13.1, \\ 218.77 + \frac{1}{2}(x - 13.1)(11.6 - 2.761905(x - 17.3)) & \text{if } 13.1 \leq x \leq 17.3. \end{cases}$$

5. (a)

$$h(t) = \frac{89t + 140}{t + 28}$$

(b) 32.30769 years from today

6. 53.23064 years after the year 2000

7. (a)

$$f(g(x)) = \begin{cases} 8x + 19 & \text{if } x \geq -5/2, \\ -4x - 11 & \text{if } x < -5/2. \end{cases}$$

(b) 19/4 is the only solution