

Math 120  
Autumn 1999  
Quiz 6 Solutions

1. (a)  $\theta_b(t) = \frac{\pi}{2} + \frac{8\pi}{300}t$

(b)  $C(t) = \left(100 \cos\left(\frac{\pi t}{20}\right), \sin\left(\frac{\pi t}{20}\right)\right)$

(c)  $\theta_b(10) - \theta_c(10) = \frac{\pi}{2} + \frac{8\pi}{300} \cdot 10 - \frac{\pi}{2}$   
 $= \frac{4\pi}{15}$  radians

(d)  $S = 100 \cdot (\theta_b(10) - \theta_b(0))$   
 $= \frac{80\pi}{3}$  feet.

2. (a)  $70 \tan\left(\frac{\pi}{4}\right) = 70$

(b)  $70 \tan\left(\frac{\pi}{3}\right) - 70 \tan\left(\frac{\pi}{4}\right) = 70(\sqrt{3} - 1)$