

Name: SOLUTIONS

Quiz #9 - March 23, 2007

1. Find the equation of the tangent line to the polar curve $r = 3 - \cos \theta$ at the point where

$\theta = \pi/6$

point $(r \cos \theta, r \sin \theta)$ $\theta = \pi/6$ $r = 3$
 $= (0, 3)$

$x = (3 - \cos \theta) \cos \theta$ $x' = \sin \theta \cos \theta - (3 - \cos \theta) \sin \theta$

$y = (3 - \cos \theta) \sin \theta$ $y' = \sin^2 \theta + (3 - \cos \theta) \cos \theta$

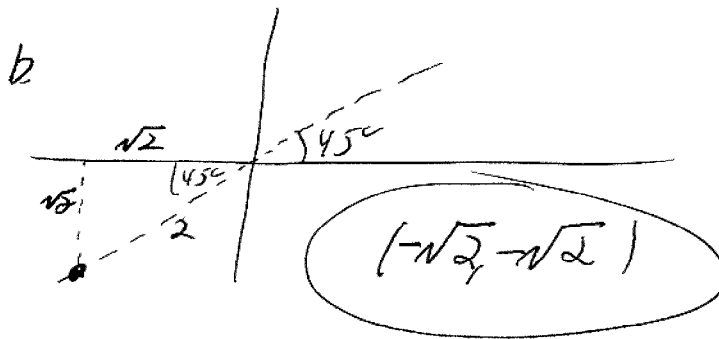
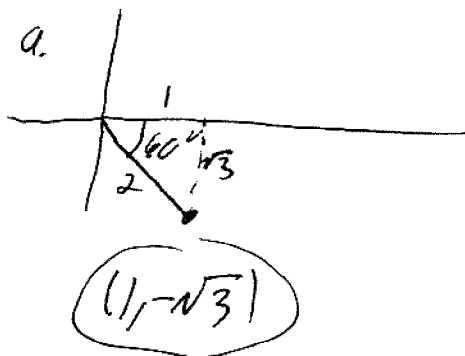
$\frac{y'}{x'} = \frac{1 + 3 \cdot 0}{0 - 3 \cdot 1} = -1/3$

$y - 3 = -\frac{1}{3} x$

2. Plot the point whose polar coordinates are given. Then find the Cartesian coordinates of the point.

a. $(2, -\pi/3)$

b. $(-2, 9\pi/4)$



3. Sketch the curve $r = \sin \theta$ for $0 \leq \theta \leq \pi$.

