

# MATH 150 Autumn 2005 Pre-Calculus

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Quiz 6

Name: \_\_\_\_\_

1. Find the general solution for  $\tan(3\theta) = -1$

**Solution:** Set  $u = 3\theta$ . The acute angle  $\alpha$  that gives  $\tan \alpha = 1$  is  $\alpha = \frac{\pi}{4}$ . Tangent is negative in the 2nd and 4th quadrants and has period  $\pi$ . Hence  $u = \pi - \alpha + k\pi = \frac{3\pi}{4} + k\pi$  where  $k$  is an integer. But  $u = 3\theta$  implies  $\theta = \frac{\pi}{4} + \frac{k\pi}{3}$  is the answer.

2. Translate the polar equation  $r = \frac{4}{\sin \theta}$  to cartesian coordinates.

**Solution:**  $r = \frac{4}{\sin \theta}$  implies  $r \sin \theta = 4$ . But  $y = r \sin \theta$  then implies  $y = 4$  is the answer.