Homework 7

math123 — Summer 2009

July 21, 2009

1. Find the cube roots of $-27i$ and represent them graphically. Explain your steps.

2. Graph $y = 50 \tan(\frac{x}{2} + \pi)$ by hand. Label at least three points and any asymptote.

3. Rewrite $\sin(\tan^{-1}(x))$ as an algebraic expression in x. Explain your steps.

4. Let $z_1 = 2\sqrt{3} - 2i$ and $z_2 = 1 + \sqrt{3}i$. Find $\frac{z_1}{z_2}$ in both polar $(re^{i\theta})$ and cartesian $(a + ib)$ form.

5. Two cars separate from an initial point. The first is going 40mph and heading North. The second is going 20mph and heading Northwest (so they have a 45 degree angle between them).

   (a) How far apart will they be in 1 hour?

   (b) How far apart will they be in 2 hours?

   (c) How far apart will they be in t hours? (Find a general formula)