Math 322 Section 3 Written Homework 1

1) Find all fifth roots of 1 and express in both Cartesian and polar form using the principal argument. Be sure to show your work.

2) Find all three cube roots of $1 + i$ and express in both Cartesian and polar form using the principal argument. Be sure to show your work.

3) a) Show that if $z = x + iy$ then

$$\cosh z = \cosh x \cos y + i \sinh x \sin y.$$

b) Find all solutions to $\cosh z = 1$. (Hint: look at the imaginary part of the equation first.)