Name: 11/22/05

Math 112 Exam 2

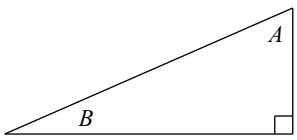
1. TRUE or FALSE. (Justify your answer)

   (a) (5pts) For any real number x, we know $\arccos(\cos(x)) = x$.

   (b) (5pts) $x + 1$ is a factor of the polynomial $f(x) = x^{94} + 3x^{21} + 2$.

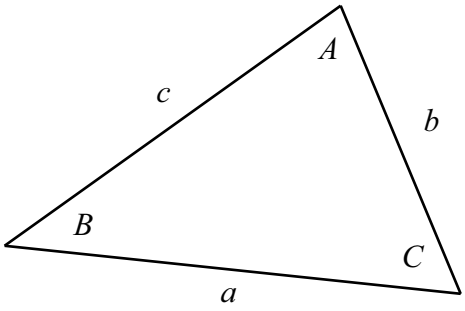
   (c) (5pts) It is possible for the lengths of a triangle to be 4, 17, and 12.

   (d) (5pts) In the following triangle $\sin A$ equals $\cos B$.



2. (10pts) A ladder is leaning against a wall. The ladder is 14 feet long and the distance from the foot of the ladder to the base of the wall is 7 feet. What angle does the ladder make with the ground? (Assume the angle between the wall and the ground is 90°)

3. For this problem use the picture



(a) (10pts) Given that $a = 3$, $b = 3\sqrt{2}$, and $A = 30°$ find B and C.

(b) (10pts) Given that $b = 4$, $c = 3$, and $A = 120°$, find a.

4. (10pts) Solve for x (find all solutions)

$$-2\cos x - 2 = \sin^2 x$$

5. (10pts) Write the following complex number in standard form $(a + bi)$.

$$\frac{10i}{-3 - i}$$

6. (10pts) Find the rule of f^{-1} where

$$f(x) = 7\ln(4x - 30)$$

7. (10pts) Find all roots of the polynomial

$$f(x) = x^3 + x^2 - 15x + 25$$

given that $f(2 - i) = 0$.