

Name:

11/22/05

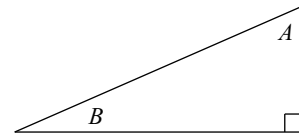
Math 112 Exam 2

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 $f(x) = x^{94} + 3x^{21} + 2$.

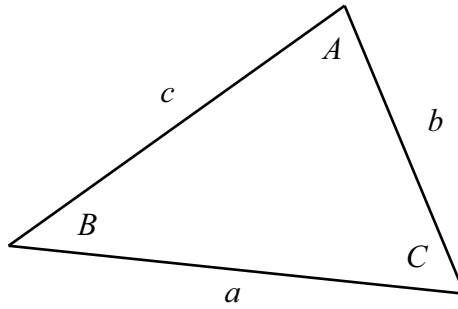
(c) (5pts) In the following triangle $\sin A$ equals $\cos B$.



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

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 $A = 30^\circ$ find B and C .

(b) (10pts) Given that $b = 2$, $c = 5$, and $A = 120^\circ$, find a .

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

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

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

$$\frac{5i}{-2 - i}$$

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

$$f(x) = 4 \ln(3x + 12)$$

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

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

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