

**MATH. 125, QUIZ 7 - Section 4.7 & 4.8** (25points = 5% final grade)

1. (6 points each) **NO calculator allowed for this problem! Find the exact value of each expression; if there is no possible answer write undefined and EXPLAIN. SHOW YOUR WORK.**

$$(a) \sin\left(\cos^{-1}\left(-\frac{1}{5}\right)\right) = \sqrt{1 - \left(-\frac{1}{5}\right)^2} = \frac{4\sqrt{6}}{5}$$

$$(b) \tan\left(\sin^{-1}\left(\frac{1}{4}\right)\right) = 1 \div \sqrt{4^2 - 1} = \frac{\sqrt{15}}{15}$$

2. Solve the following right triangles; that is find all the remaining sides and angles of the triangles. We follow the usual convention that the vertex opposite to side  $a$  is denoted by  $\alpha$ , vertex opposite side  $b$  is denoted by  $\beta$ , and vertex opposite side  $c$  is denoted by  $\gamma = 90^\circ$ . Round your answer to two decimal points; express the angles in degrees. . **You are allowed to use a calculator but you still have to show your work step by step (like in the book) not just write the final answer.**

(a) (7 points total) If  $a = 17, \beta = 41^\circ$  then

i.  $b = 17 \tan 41^\circ = 14.78$

ii.  $c = \frac{17}{\cos 41^\circ} \simeq 22.53$

iii.  $\alpha = 90^\circ - 41^\circ = 49^\circ$

(b) (7 points total) If  $c = 15, b = 11$ , then

i.  $a = \sqrt{15^2 - 11^2} \simeq 10.20$

ii.  $\alpha = \cos^{-1} \frac{11}{15} \simeq 42.83^\circ$

iii.  $\beta = \sin^{-1} \frac{11}{15} \simeq 47.17^\circ$