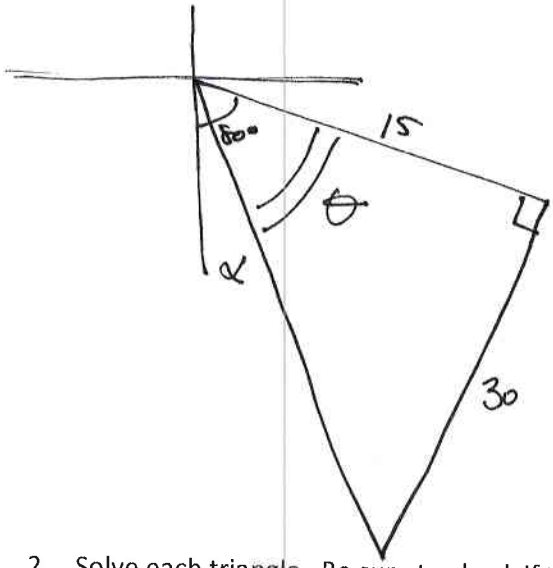
Math 1149, Quiz #8, Fall 2013 Name KEY

Instructions: Show all work. It may help you to draw a sketch of the triangle and label values. Use exact values unless specifically told to round.

1. A ship leaves the port of Miami with a bearing of S80°E and a speed of 15 knots. After 1 hour, the ship turns 90° toward the south. After 2 hour more, maintaining the same speed, what is the bearing of the ship from the port? Round your answer to one-tenth of a degree.



$\theta + \alpha = 80°$ $\tan\theta = \frac{30}{15} = 2$

$\theta = 63.4°$

$80 - 63.4 = 16.6°$

bearing S 16.6° E

(at a distance of $\approx$ 33.5 knots)

2. Solve each triangle. Be sure to check if the information solves for one triangle, two triangles or none. If it solves for two, give both triangles.

a. B=20°, b=4, c=6. two: ① $C = 30.9°, A = 129.1°, a = 9.1$ ② $C = 149.1°, A = 10.9°, a = 2.2$

$\frac{\sin B}{4} = \frac{\sin C}{6} \Rightarrow \sin C = \frac{\sin B \cdot 6}{4} \approx .513$ $C \approx 30.9°$

or $C \approx 149.1°$

$A = 129.1$ $\frac{\sin A}{a} = \frac{\sin B}{4}$ $a = 9.1$ $A = 10.9$ $a = 2.2$

b. A=60°, a=4, b=5

$\frac{\sin 60}{4} = \frac{\sin B}{5}$

$\sin B = 1.08 \Rightarrow$ none

c. B=100°, b=5, c=3. $C = 36.2°$ $A = 43.8°$ $a = 3.5$

$\frac{\sin B}{5} = \frac{\sin C}{3}$

$\sin C = .59 \Rightarrow C = 36.2°$ $\frac{\sin A}{a} = \frac{\sin B}{5}$ $a = 3.5$

or $C = 143.8°$

$143.8 + 100° > 180$ no second triangle