Dawson College: Civil Technology: 201-912-DW 02

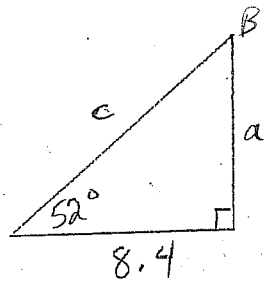
September 18, 2009

Name: SOLUTIONS

Student ID: _____

Quiz 3

Question 1. *(3 marks)* Solve the following right triangle:



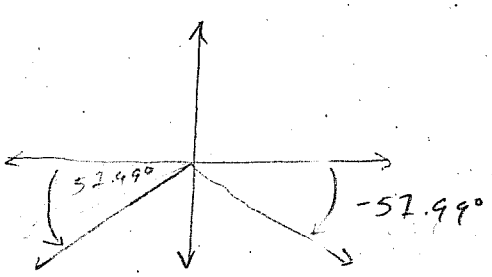
$\cos 52^\circ = \frac{8.4}{c} \Rightarrow c = \frac{8.4}{\cos 52} = 14$

$\tan 52^\circ = \frac{a}{8.4} \Rightarrow a = 8.4 \tan 52^\circ = 11$

$\angle B = 90^\circ - 52^\circ = 38^\circ$

Question 2. *(4 marks)* Find θ for $0^\circ \leq \theta \leq 360^\circ$ given $\sin\theta = -0.8480$.

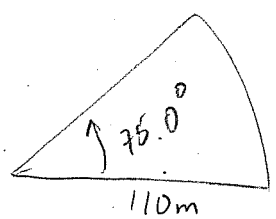
$\sin^{-1}(-0.8480) = -57.99^\circ$



$\theta_1 = 360^\circ - 37.99 = 302.01^\circ$

$\theta_2 = 180^\circ + 57.99 = 237.99^\circ$

Question 3. *(3 marks)* A spotlight beam sweeps through a horizontal angle of 75.0°. If the range of the spotlight is 110*m* what area can it cover?



$\theta = 75.0^\circ \left(\frac{\pi}{180^\circ}\right) = 1.31$

$A = \frac{1}{2}\theta r^2 = \frac{1}{2}(1.31)(110)^2$

$= 7900 m^2$