Math@TD

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Chapter 5 – Trigonometric Ratios

5.8: 3D Problems

We will be using SOH CAH TOA, the Sine Law, and the Cosine Law for these problems. We'll jump right in by solving some problems since we already know how to use the various techniques! **One thing to keep in mind, though, is that these sorts of problems can be difficult to draw, or even simply visualize because we are working in 3D!**



d) Solve for θ





Α



 $AB = \sqrt{18^2 + 15^4}$ = 23.4

B

18



 $BC = \sqrt{18^2 + (4^2 - 2(18)(14) \cos(95))}$ = 23.7



 $Cas(A) = \frac{b^{2} + c^{2} - c^{2}}{2bc}$ $C \Rightarrow Q = Cos^{-1} \left(\frac{(20.5)^{2} + (23.4)^{2} - (23.7)^{2}}{2(20.5)(23.4)} \right)$

65°

91

Example 5.8.2

From your text: Pg. 333 #5

While Travis and Bob were flying a hot-air balloon from Beamsville to Vineland in southwestern Ontario, they decided to calculate the straight-line distance, to the nearest metre, between the two towns.

 From an altitude of 226 m, they simultaneously measured the angle of depression to Beamsville as 2° and to Vineland as 3°.

They measured the angle between the lines of sight to the two towns as 80° . Is there enough information to calculate the distance between the two towns? Justify your reasoning with calculations.

ß







is directly

Straight

Or

drag







= 7132 m.

yes there is!

Lere

crowf

distance

ing

Example 5.8.3

From your text: Pg. 334 #11



Class/Homework: Pg. 332 - 334 #3ac, 4a, 7 (tricky...ask for help!), 9