

Name: _____

Task Master: _____ Cynic: _____ Recorder: _____

MTH 254

THE CONE

Spring 2015

Working in small groups (3 or 4 people), solve as many of the problems below as possible. Try to resolve questions within the group before asking for help. Each group member should then write up the solutions in their own words; Show your work! Full credit will only be given if your answer is supported by calculations and/or explanations as appropriate.

1. A right circular cone has circular base of radius R and height H , both measured in feet.
 - (a) What is the volume of the cone?
 - (b) Write down as many different integrals as you can for computing this volume.
 - (c) Do at least two of these integrals.

For some integrals, you may wish to use the fact that

$$\cos(2\alpha) = 2 \cos^2\alpha - 1 = 1 - 2 \sin^2\alpha$$