

Math 366

NEATLY PRINT NAME: _____

Exam 3

STUDENT ID: _____

Spring 2006

DATE: _____

Scarborough

PHONE: _____

EMAIL: _____

SECTION (circle one): 502_{MWF 1:50 pm} 505_{MWF 3pm}

"On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Signature of student

Academic Integrity Task Force, 2004

<http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf>

WRITE ALL SOLUTIONS IN THE SPACE PROVIDED; FULL CREDIT WILL NOT BE GIVEN WITHOUT CORRECT ACCOMPANYING WORK. FULLY SIMPLIFY ALL ANSWERS AND GIVE EXACT ANSWERS UNLESS OTHERWISE STATED. WHERE PROVIDED, PUT YOUR FINAL ANSWER IN THE BLANK PROVIDED. POINTS WILL BE DEDUCTED FOR SPELLING ERRORS. REMEMBER YOUR UNITS!

(9pts – 3pts each) 1. Choose an appropriate *metric* unit you would use to measure the following.

- a. _____ the height of your ear

- b. _____ the surface area of the top of the table in the front of this classroom (where Dr. S put her backpack)

- c. _____ the amount of water that would fit inside the average cowboy hat (assume it can hold water)

_____ (5pts) 2. Find the exact distance between the points $(-3, 1)$ and $(2, -5)$.

_____ (5pts) 3. What is the exact volume of a sphere of radius 9 cm?

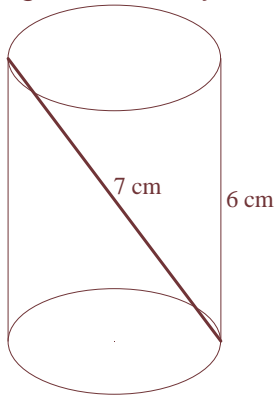
_____ (5pts) 4. Find the exact surface area S of a right regular-hexagonal prism with height 8 cm and with the length of a side of the hexagon 6 cm.

_____ (5pts) 5. If the arc length is $\frac{\pi}{8}$ millimeters with radius 10 mm, what is the exact measure, in degrees, of its central angle?

_____ (5pts) 6. Find the exact volume of a right circular cone with diameter of 12 meters and height of 5 meters.

_____ (5pts) 7. If 5 wiggles is 2 fraggles, and 8 fraggles is 11 deggles, then 7 wiggles is how many deggles?

_____ (5pts) 8. Find the exact surface area of the given right circular cylinder that contains a pin of maximum length 7 cm.



_____ (5pts) 9. If diameter \overline{NA} has length 61 mm, point T is on this circle, and \overline{NT} is 60 mm long, how long is \overline{AT} ?

(6pts) 10. Can 2 m, 3 m and 4 m be the lengths of the sides of a *right* triangle? Why or why not? Give the name of the theorem used when you explain your answer.

a. $85 \text{ mm} = \underline{\hspace{2cm}} \text{ cm}$ (exact)

b. $135 \text{ ft}^3 = \underline{\hspace{2cm}} \text{ yd}^3$ (exact)

c. $1.86 \text{ miles} \approx \underline{\hspace{2cm}} \text{ kilometers}$ (approximate to 1 decimal place)

d. $8 \text{ L} = \underline{\hspace{2cm}} \text{ cm}^3$ (exact)

e. $6.35 \text{ cm} \approx \underline{\hspace{2cm}} \text{ in.}$ (approximate to 1 decimal places)

f. g. $500 \text{ grams H}_2\text{O} = \underline{\hspace{2cm}} \text{ mL H}_2\text{O}$ (exact)

12. You are on a deserted island where lots of bamboo grows. You only have a knife that can cut bamboo.

a. (5pts) You, being the math nut that you are, require that you have a right angle for the walls in your hut you are to build to live in. How would you do this?

b. (6pts) You develop a non-standard measuring system based upon the *farm*, which is the length of your right forearm. If you have one bamboo shoot 5 *farms* long and another 9 *farms* long, what are the smallest and largest lengths for the third side of your triangle? Assume you can only measure in whole number of *farms*.

_____ length of smallest side

_____ length of longest side

c. _____ (5pts) What is the exact area of the triangle that has sides of length 5 *farms*, 9 *farms* and the smallest whole number length of the third side (from part b)? (If there is a radical in the answer, you do not have to simplify it.)

(5pts) 13. State Pythagorean Theorem. Your statement of the Pythagorean Theorem must stand alone without the use of a figure.

(6pts) 14. Prove the Pythagorean Theorem.