Math 1B (7:30am – 8:20am)
Quiz 5 Version 7
Fri May 13, 2011

What month is your birthday ? ___ ___
What are the first 2 digits of your address ? ___ ___
What are the last 2 digits of your zip code ? ___ ___
What are the last 2 digits of your DeAnza ID number ? ___ ___

SCORE: ___ / 30 POINTS

NO CALCULATORS ALLOWED

SHOW PROPER ALGEBRAIC WORK
USE PROPER NOTATION & SIMPLIFY ALL ANSWERS WHERE REASONABLE

MULTIPLE CHOICE: CIRCLE THE CORRECT ANSWER **SCORE: ___ / 3 POINTS**

A 5 foot long chain weighing 16 pounds hangs from a hook in the ceiling of an 11 foot tall room. (So, the bottom of the chain is 6 feet from the floor.) How many foot-pounds of work are done lifting the bottom loop of the chain to the ceiling so that it touches the top loop ?
(HINT: Draw "before" and "after" diagrams.)

[a] 25 [b] 10 [c] (20) [d] 30 [e] 15

A 50 foot chain weighing 4 pounds per foot hangs over the edge of a 50 foot tall building. The chain is used to lift a 25 pound tabletop from ground level to a window 20 feet above ground. **SCORE: ___ / 6 POINTS**
Write, **BUT DO NOT EVALUATE**, an expression involving an integral (or sum of integrals) for the work done.

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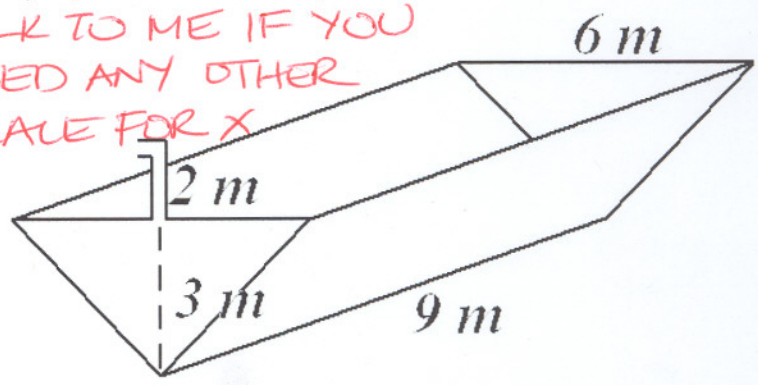
A tank in the shape of the triangular prism shown on the right is filled with water. **SCORE: ___ / 6 POINTS**
Write, **BUT DO NOT EVALUATE**, an integral for the work required to pump the water out of the spout.

TALK TO ME IF YOU USED ANY OTHER SCALE FOR X



IF X=0 IS BOTTOM OF TANK
AND X=3 IS TOP OF TANK
AND X=5 IS TOP OF SPOUT

$$\int_0^3 (9.8)1000\,(9(2x))(5-x)\,dx$$

OR

IF X=0 IS TOP OF TANK
AND X=3 IS BOTTOM OF TANK
AND X=-2 IS TOP OF SPOUT

$$\int_0^3 (9.8)1000\,(9(6-2x))(x+2)\,dx$$

OR

IF X=0 IS TOP OF SPOUT
AND X=2 IS TOP OF TANK
AND X=5 IS BOTTOM OF TANK

$$\int_2^5 (9.8)1000\,(9(10-2x))(x)\,dx$$

The region bounded by $x = 1$, $y = \ln x$ and $y = 1$ is revolved around the $y-$ axis. **SCORE: ___ / 6 POINTS**
Find the volume of the solid.

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The region bounded by $y = -2$, $y = \frac{1}{2}x - 1$ and $y = x - 2$ is revolved around the line $y = 1$. **SCORE: ___ / 9 POINTS**

[a] Write, **BUT DO NOT EVALUATE**, an integral (or sum of integrals) for the volume of the solid using the shell method.

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[b] Write, **BUT DO NOT EVALUATE**, an integral (or sum of integrals) for the volume of the solid using the washer method.

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[c] Find the volume of the solid by evaluating the appropriate integral(s) from either [a] or [b].

SEE 7:30 VERSION 8