Math 1B (9:30am – 10:20am)
Quiz 6 Version C
Fri May 21, 2010

SCORE: ___ / 30 POINTS

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 social security number ? ___ ___
[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER, USE YOUR STUDENT ID NUMBER]

NO CALCULATORS ALLOWED

YOU MUST SHOW PROPER CALCULUS LEVEL WORK TO EARN FULL CREDIT

Find the length of the curve $y = \dfrac{5x^8 + 3}{30x^3}$, $1 \le x \le 2$. **SCORE: ___ / ___ POINTS**

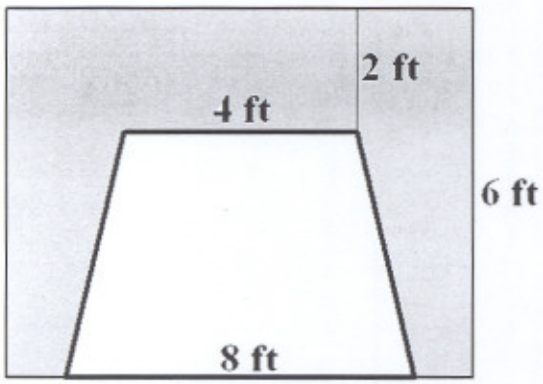
SEE 9:30 OTHER VERSION C
QUESTION 3

Find the center of mass of the region between $y = x^2$ and $y = -x$ on the interval $[1, 2]$. **SCORE: ___ / ___ POINTS**

SEE 9:30 OTHER VERSION C
QUESTION 1

Find the hydrostatic force on the trapezoidal plate submerged in water. SCORE: ___ / ___ POINTS

NOTE: The bottom of the plate is 6 feet under the surface of the water. **You may use ρ as the density of water in your final answer.**



SEE 9:30 OTHER VERSION C QUESTION 4

Find the surface area if the curve $y = \sqrt{x-1}$, $2 \le x \le 5$ is revolved around the x-axis. SCORE: ___ / 8 POINTS

(½) (1) (1) $x = y^2+1$, $1 \le y \le 2$

(1) $\int_1^2 2\pi y \sqrt{1+(2y)^2}\,dy$

$= \int_1^2 2\pi y \sqrt{1+4y^2}\,dy$

$u = 1+4y^2$ ↗ $y=2 \to u=17$ ↘ $y=1 \to u=5$

$\frac{du}{dy} = 8y$

$\frac{1}{4}du = 2y\,dy$

(½) $= \int_5^{17} \frac{1}{4}\pi\sqrt{u}\,du$ (2)

(1) $= \frac{1}{6}\pi u^{\frac{3}{2}}\Big|_5^{17}$

$= \frac{\pi}{6}(17^{\frac{3}{2}} - 5^{\frac{3}{2}})$ (1)

★ SEE OTHER SOLUTION IN 9:30 OTHER VERSION C QUESTION 2