Math 1A (9:30am – 10:20am)
Quiz 1
Fri Jan 9, 2009

SCORE: 10 / 10 POINTS

What month is your birthday ? 01
What are the first 2 digits of your address ? 12
What are the last 2 digits of your zip code ? 89
What are the last 2 digits of your social security number ? 36
[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER, USE YOUR STUDENT ID NUMBER]

Estimate the slope of $f(x) = \ln x$ at $x = 3$ by using the method of secant lines discussed in class. **SCORE: 4 / 4 POINTS**

Show 6 points you used, and the corresponding slopes. You must use 3 points on each side of $x = 3$. Round your slopes to 4 decimal places.

POINT	SLOPE OF SECANT LINE	POINT	SLOPE OF SECANT LINE
$(2.9, \ln 2.9)$	0.3390 $\frac{1}{2}$	$(3.1, \ln 3.1)$	0.3279 $\frac{1}{2}$
$(2.99, \ln 2.99)$	0.3339 $\frac{1}{2}$	$(3.01, \ln 3.01)$	0.3328 $\frac{1}{2}$
$(2.999, \ln 2.999)$	0.3334 $\frac{1}{2}$	$(3.001, \ln 3.001)$	0.3333 $\frac{1}{2}$

ESTIMATED SLOPE OF $f(x) = \ln x$ AT $x = 3$: 0.3333 1

You want to estimate the length of the curve $f(x) = x^2 - 4x$ from $x = 0$ to $x = 12$ to four decimal places using 4 line segments (at equally spaced x-values). **SCORE: 4 / 4 POINTS**

$|0-3|\ |3-6|\ |6-9|\ |9-12|$

[a] Write down the numerical expression you would need to enter into your calculator to find that length.

$(0,0)$
$(3,-3)$
$(6,12)$
$(9,45)$
$(12,96)$

$$d = \sqrt{(3-0)^2 + (-3-0)^2}^{\frac{3}{4}} + \sqrt{(6-3)^2 + (12-(-3))^2}^{\frac{3}{4}} + \sqrt{(9-6)^2 + (45-12)^2}^{\frac{3}{4}} + \sqrt{(12-9)^2 + (96-45)^2}^{\frac{3}{4}}$$

$$= \sqrt{3^2 + (-3)^2} + \sqrt{3^2 + 15^2} + \sqrt{3^2 + 33^2} + \sqrt{3^2 + 51^2}$$

[b] Use your calculator to find the length using the method in [a]. Round your answer to 4 decimal places.

$d =$ 103.7639 (corr to 4 d.p.). 1

[MULTIPLE CHOICE] Estimate the length of the curve $f(x) = x^3$ from $x = -1$ to $x = 5$ to four decimal places using 3 line segments (at equally spaced x-values). **SCORE: 2 / 2 POINTS**

[a] 126.5704 [b] 126.8031 [c] 126.9256 [d] 127.0337

LETTER OF CORRECT ANSWER: [C]

$(-1, -1)$
$(1, 1)$
$(3, 27)$
$(5, 125)$.