© Scarborough, February 2006, Math 150, Exam II

Math 150 **NEATLY PRINT NAME**: ______________________________

Exam 2 **STUDENT ID**: ______________________

Spring 2006 **DATE**: ___________________________

Scarborough **PHONE**: __________________________

FORM C **EMAIL**: ___________________________

SECTION: ________________________

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

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Signature of student

Academic Integrity Task Force, 2004
http://www.tamu.edu/aggiehonor/FinalTaskForceReport.pdf

Math 150 - 501	T 3:55-4:45	BLOC 104
Math 150 - 502	R 3:55-4:45	BLOC 104
Math 150 - 503	T 2:20-3:10	READ 150
Math 150 - 504	R 2:20-3:10	BLOC 104
Math 150 - 505	T 8:00-8:50	BLOC 104

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. REMEMBER YOUR UNITS!

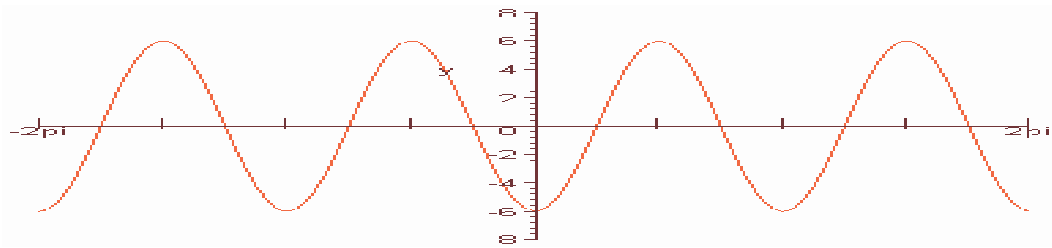
______________________________ 1. (5pts) Exactly evaluate $\left(5^{\log_5 8}\right)\left(\ln\left(\ln e^{e^3}\right)\right)$.

______________________ 2. (5pts) What is the period of $y = -8\tan\left(3x - \frac{4\pi}{5}\right)$?

x = ___________________________ 3. (5pts) Exactly solve

$3x^2\left(5^{-2x}\right) = 12x\left(5^{-2x}\right) + 135\left(5^{-2x}\right)$.

y = ________________________________ (5pts) 4. Write a function of the form $y = a\cos k(x-b)$ whose graph is shown below where *a*, *k* and *b* are **positive**.



__________________________ 5. (5pts) Aggie-12 has a half-life of 7000 years. Exactly how long will it take for a 10-gram sample of Aggie-12 to decay to 3 grams?

6. (5pts) Perform polynomial long division on $\dfrac{2x^3+19x^2+27x-89}{x^2+11x+30}$.

____ 7. (5pts)

List all the asymptotes of $r(x) = \dfrac{-5x^3 + 15x^2}{4x^3 + 40x^2 - 92x + 48}$. Remember asymptotes are equations of lines.

8. (5pts) Given $p(x) = 7x^5 - 6x^3 - 2x^2 + 5x + 9$, use Descartes' Rule of Signs and the result of the Fundamental Theorem of Algebra to complete the chart about the possible nature of the number of zeros.

POSITIVE REAL ZEROS	NEGATIVE REAL ZEROS	IMAGINARY (COMPLEX) ZEROS

f(t) = ____________________________________ 9. (5pts) Find a function f(t) that models the simple harmonic motion having an amplitude of 15 cm and a period of 2 seconds. Assume that the displacement is zero at time t = 0.

p(x) = ____ 10. (5pts) Find the polynomial p(x), of lowest degree, with *integer* coefficients, with zeros of $\frac{-5}{4}$ and $4+3i$ such that $\frac{-5}{4}$ is a double root , and with $a_3 = 176$. Write your answer in the form of $p(x) = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x^1 + a_0$.