Math Xb Midterm 1 Part 1
Spring 2006

Please circle your section:

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MWF 10–11	**MWF 10–11**	MWF 10–11

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Part One Scores

Problem Number	Possible Points	Score
1	6	
2	12	
3	8	
Total	26	

Midterm I Scores

|	Possible Points	Score
Part One	26	
Part Two	74	
Total	100	

Directions—Please read carefully!

You *are not allowed* to use a calculator or any other aids on this part of the exam. When you are finished with this part of the exam, you may turn it in to the proctor and receive the second part of the exam. Once you have turned in this first part of the exam, you may not look at it again, so be sure you have finished it completely before turning it in.

To receive full credit on a problem, you will need to justify your answers carefully—**unsubstantiated answers will receive little or no credit** (except if the directions for that question specifically say no justification is necessary). Be sure to **write neatly—illegible answers will receive little or no credit**. If more space is needed, use the back of the previous page to continue your work. Be sure to make a note of this on the problem page so that the grader knows where to find your answers.

Try to finish the first part of the exam within 20 minutes in order to leave time to complete the second part of the exam. The second part of the exam consists of seven problems, and you may use a calculator on the second part of the exam. **Good luck!**

1. (6 points, 1 point each) Use the calibrated unit circle below to evaluate each of the following expressions. You do not need to show your work – no justification of your answers is necessary. Note that each square on the grid below measures 0.1×0.1. Round your answers to the nearest tenth.
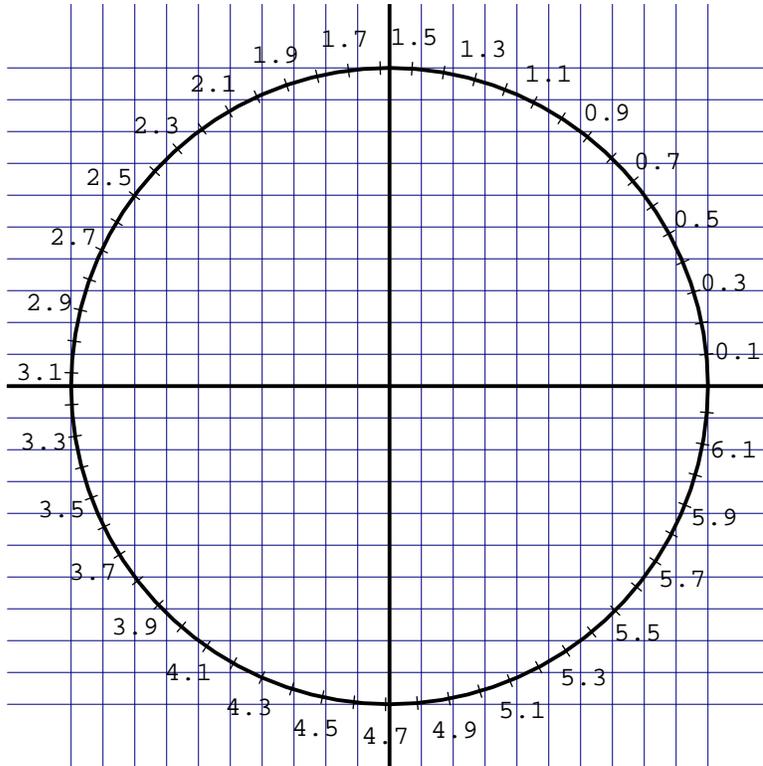
(a) $\sin 0.7$

(b) $\cos 0.7$

(c) $\sin^{-1} 0.3$

(d) $\cos^{-1} 0.3$

(e) $\sin^{-1}(-0.3)$

(f) $\cos^{-1}(-0.3)$

2. (12 points, 3 points each)

   (a) Find $\cos\left(\sin^{-1}\left(\dfrac{-3}{5}\right)\right)$

   (b) Find $\arctan\left(\dfrac{-1}{\sqrt{3}}\right)$

   (c) If $g(x) = \sin\left(\cos(3x^2 + 12)\right)$, find $g'(x)$.

   (d) If $f(x) = x^{x^2+x+1}$, find $f'(x)$.

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3. (8 points, 4 points each)

(a) Find all solutions to the equation $\sin 2x \cos x = \dfrac{1}{2}\sin 2x$ for $x \in [0, 2\pi]$. (Your answer should *not* involve any inverse trigonometric functions.)

(b) Find all solutions to the equation $\sin 3x = 0.2$ for x any real number. (Your answer *must* involve the function arcsin.)