Math 121 Exam III Lowman Fall 2011

- **No Cell Phones**.
- Calculators can be used unless specified otherwise for a given problem.
- Put your NAME, UIN, TA's NAME and DISCUSSION TIME on the exam booklet. Do not write in the upper right corner of the booklet, this is used for grading. Also include Math 121, Exam 3, Fall 2011
- Show all work in exam booklet. Clearly label and box answers. If no work then no credit.
- Keep the exam sheet, turn in your exam booklet. You must finish by 10:50AM.

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1. Use the **Law of Sines** to solve the **SAA** Triangle for side b only. Do not solve for side c **:** $A = 40^o, B = 60^o, a = 4$. Show all work and give answers rounded to one decimal place.

2. Use the **Law of Cosines** to solve the SSS Triangle angle A only. Assume standard triangle notation for angles A, B, C and and sides a, b, c:
$a = 3, b = 5, c = 6$. Show all work and give answer in degrees rounded to two decimal places.

3. Given $\theta = \tan^{-1}(\frac{1}{2})$ find $\sin\theta$. Give the exact answer, show your work and do not use a calculator. Hint, draw a right triangle and find the lengths of all sides.

4. Simplify: $\dfrac{\sin(2\theta)}{1-\cos(2\theta)}$. Show all steps. Note the minus sign.

5. Find the exact value of $\tan(\frac{5\pi}{6})$. Show your work and do not use a calculator.

6. Find **All** of the exact solutions to: $2\sin(4\theta) = \sqrt{3}$. Show your work and do not use a calculator.

7. Find the exact value of: $\tan^{-1}(\tan\frac{5\pi}{4})$. Give the exact answer, show your work and do not use a calculator. Hint, first find $\tan\frac{5\pi}{4}$

8. Find all solutions to the following equation on the interval $[0, 2\pi)$:
$\sin\theta \cdot \cos\theta - \frac{1}{2}\cos\theta = 0$. Give the exact answer, show your work and do not use a calculator.