Test #2: Chapter 6
Mth 164-280

Name: _____

Important Dates/Times: <u>Turn This Test in By-</u>

      Tuesday, 7:00PM, 03/30/10 = 10 point bonus
      Tuesday, 7:00PM, 04/06/10 = as graded
      Wednesday, 8:00AM, 04/07/10 = max(25 point penalty, 0 grade)
      Thursday, 8:00AM, 04/08/10 = max(50 point penalty, 0 grade)
      Friday, 8:00AM, 04/09/10 = max(75 point penalty, 0 grade)
      Any Date Later = 0 grade

Instructions: Print this test from the PDF file on Blackboard. Show all work on these pages. You may use the back of the pages, if necessary. Put <u>only</u> the answers in the answer block(s) if provided.

- An identity verification requires you to also check the "yes" box or the "no" box to state your conclusion. This is not a true|false problem. You must show your work and the conclusion.
- If instructed to provide the <u>*decimal*</u> answer, round it to the specified precision.
- If instructed to provide the <u>*exact*</u> answer, use π, a radical expression ($\sqrt{}$), or a fraction, as applicable.

1. Verify the identity:

$$\tan^2\theta + \cos^2\theta\sec^2\theta = \sec^2\theta.$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

2. Verify the identity:

$$\sec\theta + \tan\theta\sin\theta = \frac{2-\cos^2\theta}{\cos\theta}$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

3. Verify the identity:

$$\frac{\cos^2\theta}{1 - \sin\theta} = 1 + \sin\theta$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

4. Verify the identity:

$$\frac{\sec\theta\cos\theta + \tan\theta}{\sin\theta} = \csc\theta + \sec\theta$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

5. Make use of a trigonometric identity to find the *exact* value of $\cos 75°$.

Answer:

6. Given $\sin \alpha = \frac{5}{13}$, with α in Quadrant II, and $\cos \beta = \frac{-7}{25}$, with β in Quadrant III, find the *exact* value of $\sin(\alpha + \beta)$.

Answer:

7. Verify the identity:

$$\sin(\pi - \theta) = \sin \theta$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

8. Write:

$$\cos 4\theta \cos 2\theta - \sin 4\theta \sin 2\theta$$

in terms of a single trigonometric function.

Answer:

9. Find the *exact* value of $\sin 2\theta$, given that $\sin \theta = \frac{5}{13}$, with θ in Quadrant II.

Answer:

10. Write

$$y = \frac{1}{2}\sin \theta - \frac{\sqrt{3}}{2}\cos \theta$$

in the form

$$y = k \sin(\theta + \alpha),$$

Where α is in radians

Answer:

11. Verify the identity:

$$\frac{2 \tan \frac{\theta}{2}}{1 + tan^2 \frac{\theta}{2}} = \sin \theta$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

12. Verify the identity:

$$\cos^4\theta - \sin^4\theta = \cos 2\theta$$

	Yes, can verify. See my work on this paper.
	No, can not verify. See my work on this paper.

13. Find the *exact* value of cos 15°.

> Answer:

14. Use a calculator to approximate the radian measure of

$$\cos^{-1}(-0.2347)$$

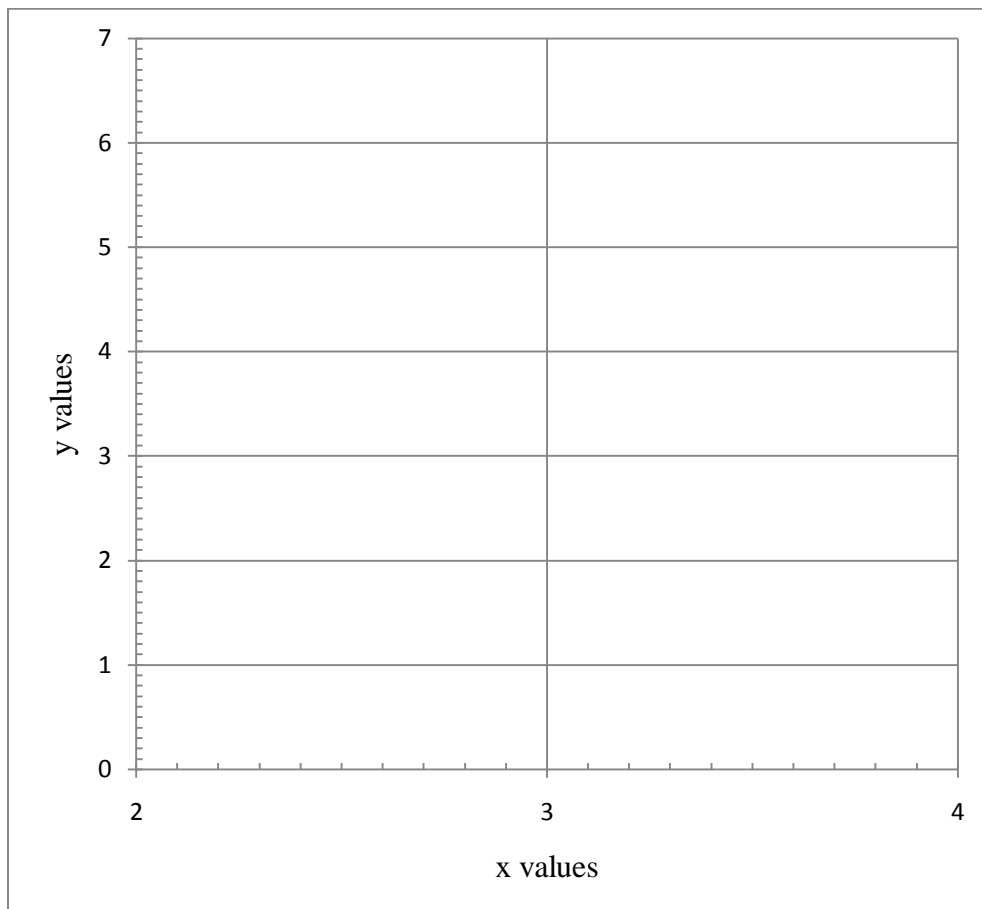to the *decimal* value of the nearest thousandth.

> Answer:

15. Find the _exact_ value of

$$\sin(\tan^{-1}\tfrac{15}{8}).$$

Answer:

16. Graph:

$$y = 2\cos^{-1}(x - 3) \text{ for } 2 \le x \le 4$$

17. Solve for θ:

$$4\cos\theta - 3 = 0, \quad \text{for } 0° \leq \theta < 360°$$

State the _decimal_ solutions to the nearest tenth of a degree.

Answer:

18. Solve for θ:

$$6 + 6\sin\theta = 9, \quad \text{for } 0 \leq \theta < 2\pi$$

State the _exact_ solutions.

Answer:

19. Solve for θ:

$$2 \sin^2\theta - 5\cos\theta + 5 = 0, \qquad \text{for } 0 \leq \theta < 2\pi$$

State the _exact_ solution.

Answer: