

Math 1151 Test 1 February, 15, 2001.

Professor Peter A. Rejto

Name (Print): _____ Student ID number: _____
Section number: _____ Name of TA: _____
Signature: _____

**6 pages. Show all your work. No work no credit. No books/notes.
Calculators: Scientific calculator are allowed. However, graphing
calculators are not allowed. More specifically, calculators that display
two or more lines are not allowed.**

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1. (25 pts.)
 - (a) (13 pts.) Convert 30° to radians.

- (b) (12 pts.) Convert $\frac{\pi}{12}$ radians into degrees.

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2. (25 pts.) The minute hand of a clock is 6 inches long. How far does the tip of the minute hand move in 15 minutes?

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3. (25 pts.)

(a) (10 pts.) Find the exact value of:

$$2 \sin \frac{\pi}{3} - 3 \tan \frac{\pi}{6}$$

(b) (15 pts.) Given that

$$\tan \alpha = \frac{5}{12} \text{ and that } \pi < \alpha < \frac{3\pi}{2}.$$

Find $\sin \alpha$.

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- 4.
5. (25 pts.) Let f be a given function and let p be a given number. Define that p is a period of f .

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6. (25 pts.) The current I , in amperes, flowing through an alternating current circuit at time t is:

$$I(t) = 120 \sin\left(30\pi t - \frac{\pi}{3}\right), \quad t \geq 0.$$

Find the period.

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7. (25 pts.) Recall the second conclusion of the first Theorem in Section 6.1 of the text which gives the formula:

$$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta.$$

Prove this formula.