

Math 1151-1 Sample Exam-1

Name:

Grade:

February 15, 2007

Show all your work for full credits. No calculator, notes, or books are allowed. However, you do not need to perform algebraic simplifications or to rationalize denominators unless otherwise said so. The total score will be of 100 points.

1. (10 points) Let a circle have radius $r = 15$ feet. Find the length of an arc subtending an angle of π radian. Find also the area of the sector of the circle.

2. (10 points) Answer each question.

- (a) Convert 55° to radians.

- (b) Convert $\pi/10$ to degrees.

3. (30 points) Answer each question.

(a) If θ lies in the first quadrant and $\sin \theta = \frac{1}{3}$, find the values of $\tan \theta$ and $\cos \theta$.

(b) If $\sin \theta = -\frac{2}{3}$ and $\pi < \theta < \frac{3\pi}{2}$, find the values of $\csc \theta$ and $\cos \theta$.

(c) Find the exact value of $\sin 390^\circ$.

4. (20 points) Consider the function $y = 2 \sin(x - \pi) + 2$. Answer each question.

(a) Find the amplitude, period, and phase shift.

(b) Sketch the graph. Plot some specific points on the graph.

5. (30 points) Simplify each of the following expressions.

(a)

$$5 \sin 10^\circ \csc 10^\circ.$$

(b)

$$-10 \sin^2\left(\frac{\pi}{12}\right) - 10 \cos^2\left(\frac{\pi}{12}\right).$$

(b)

$$\tan 50^\circ - \frac{\sin 410^\circ}{\cos 50^\circ}.$$