

NAME _____

Math 6
Test 1
Winter 1998

You have 50 minutes to complete this test. You must *show all work* to receive full credit. Each question is worth the indicated value, for a total of 100 points possible. You may also earn 5 bonus points from the bonus problem. If you have any questions, please come to the front and ask.

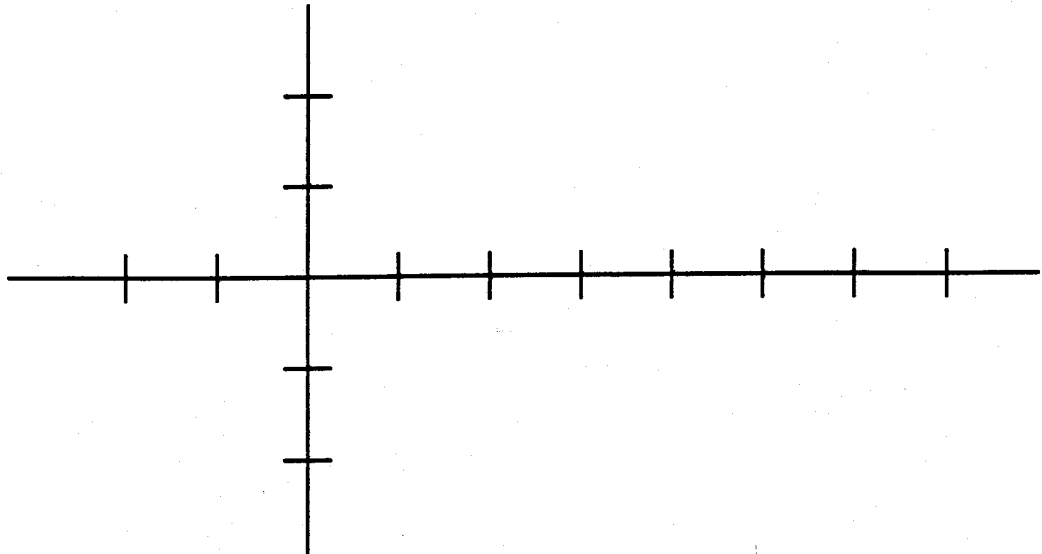
U. 7
4 1.

(24 points) Complete this chart, using exact values:

θ	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\csc\theta$	$\sec\theta$	$\cot\theta$
$-\frac{2\pi}{3}$						
225°						
		-1				
$\frac{\pi}{3}$						

U. 4
5 2.

(10 points) Sketch at least one period of $y = -2\cos\left(\frac{1}{2}x + \frac{\pi}{2}\right)$ on the axes below. Label your graph clearly, showing all relevant information.



6.1
5-13.

(8 points) Convert $38^{\circ}12'16''$ to radians, and express your answer as a decimal correct to 4 places.

6.2
5-2

4.

(8 points) A boat is spotted from a lighthouse that is 100 ft tall. If the angle of depression from the top of the lighthouse to the boat is 2° , how far is the boat from the base of the lighthouse?

6.3
4-35.

(10 points) Show that $\sec x(\csc x + 1) = \frac{1 + \sin x}{\cos x \sin x}$.

6.3
4-9 6.

(8 points) Circle True or False -- Mark answers CLEARLY.

- | | | | |
|----|---|------|-------|
| a) | $\cos 30^{\circ} \sec 30^{\circ} = 1.$ | TRUE | FALSE |
| b) | 120° and -30° are complementary angles. | TRUE | FALSE |
| c) | $\csc(-x) = -\csc(x).$ | TRUE | FALSE |
| d) | $\sin 72^{\circ} = \cos 18^{\circ}.$ | TRUE | FALSE |

6.2
5/7

(12 points) If $\sin \alpha = \frac{4}{7}$ and $\cos \alpha < 0$, find the exact values of the following:

- a) $\cos \alpha$
- b) $\tan \alpha$
- c) $\csc \alpha$
- d) $\sec \alpha$
- e) $\cot \alpha$
- f) $\sin(90^\circ - \alpha)$

6.6
4/8

(10 points) On the interval $[-2, 4]$, sketch $f(x) = \tan\left(\frac{\pi}{2}x - \frac{\pi}{2}\right) + 1$. Label your graph clearly, showing all relevant information.

