Trigonometry
Sample Exam I - 4 pages
Chapter 5
Math 1060

NAME: _____

TIME LIMIT: 50 MINUTES   Calculator Allowed: Scientific

The point value of each problem is in the left-hand margin. You must show your work to receive full credit for your answers, except on problem 1. Round off all decimals in your answers to two places. Work neatly.

(30) 1. Fill in the blank.

(a) 2.51 radians is _____ degrees.

(b) The *exact* value of $\cos^{-1}(\cos\frac{4\pi}{3})$ is _____ .

(c) The *exact* value of $\sin(210°)$ is _____ .

(d) The reference angle of the angle $257°$ is _____ .

(e) Angle _____ radians is between 0 and 2π and has the same terminal side as the angle $-\frac{\pi}{4}$.

(f) Angle $\alpha =$ _____ ° is between $180°$ and $270°$ and $\sin\alpha = \sin(-65°)$.

(g) $(\sin\theta)^2 +$ _____ $= 1$ is a circular or Pythagorean identity.

(h) In a right triangle the sine of an acute angle is _____ over the _____ .

(i) If $\sin\theta = -\frac{1}{2}$, then $\sin(-\theta) =$ _____ .

(j) The angle θ between $90°$ and $180°$ such that $\cos\theta = -\frac{1}{2}$ is _____ degrees.

(k) If the point $(7, -4)$ is on the terminal side of the angle θ, placed in the standard position, then

$\tan\theta =$ _____ .

(l) If $\tan\theta < 0$ and $\sin\theta < 0$, then the angle θ is in the _____ quadrant.

(m) Angle $\theta =$ _____ ° is between $0°$ and $90°$ and $\sin\alpha = \cos(60°)$.

(n) The length of the arc subtended by a central angle of 2.4 in a circle of radius 15 is _____ .

(o) The area of a triangle with length of sides 3, 5 and 6 is _____ .

(10) 2. Find the **exact** value of all six trigonometric functions of the angle θ in standard position if the point $P = (-3, 2)$ is on its terminal side. **Show your work.**

(10) 3. Find the **exact** value of the remaining five trigonometric functions of the angle θ if $\tan \theta = \frac{4}{5}$ and $\sin \theta < 0$. **Show your work.**

(8) 4. A 6 feet diameter merry-go-round rotates at the rate of 8 revolutions per minutes. If a kid slips out of it, what is his/her linear speed? **State the formula used.**

(10) 5. The distance between points A and B on the ground is 100 meters. A helicopter is hovering in the air *between* points A and B. If the angle of elevation from point A to the helicopter is $60°$ and the angle of elevation from point B is $65°$, find the distance of the helicopter from the ground.

(10) 6. Determine all "standard" triangles, if any, with $a = 3$, $b = 5$ and $\angle C = 40°$. State all formulas used.

(7) 8. Find the exact value of $\tan(\sin^{-1}(-\frac{4}{7}))$. Show your work.

(15) 7. Determine all "standard" triangles, if any, with $a = 7$, $c = 6$, and $\angle C = 50°$.