PreCalculus '14-15
Trig Basics Test – Form A

Name SOLUTION KEY

Score _____

Directions: Round at 3 decimal places.
Show all work.

1. (12, -11) is on the terminal side of A. Find the six exact trig values:

sin A= $-11/\sqrt{265}$ cos A= $12/\sqrt{265}$

tan A= $-11/12$ cot A= $-12/11$

sec A= $\frac{\sqrt{265}}{12}$ csc A= $-\frac{\sqrt{265}}{11}$

2. $\sin B = -\frac{8}{17}$ in Quadrant III. Find the other five exact trig values: $x = -15$

$\sin B = -\frac{8}{17}$ cos B= $-15/17$

tan B = $8/15$ cot B = $15/8$

sec B = $-17/15$ csc B = $-17/8$

3. $\tan C = -\frac{4}{3}$ in Quadrant II. Find the other five exact trig values: $r = 5$ $x = -3$ $y = 4$

sin C = $4/5$ cos C = $-3/5$

cot C = $-3/4$ $\tan C = -\frac{4}{3}$

sec C = $-5/3$ csc C = $5/4$

4. Find the approximate values, in degrees, of A, B, and C above.

A= $-42.510 \pm 360n$

B= $-151.928 \pm 360n$

C= $126.570 \pm 360n$

5. Find the approximate values of:

Cos 145°= -.819

Sin 896°= .86070

Tan 5.46°= .096

Sec -1.781°= 1.000

Csc 26°= 2.281

Cot 973° = .306

6. Find the approximate values (in degrees) of:

$\text{Cos}^{-1}(-.354) = \{ \pm 110.732 \pm 360n$

$\text{Sin}^{-1}.913 = \{ 65.923 \pm 360n$
$114.077 \pm 360n$

$\text{Tan}^{-1}-3.08 = \{ -72.013 \pm 360n$
$107.987 \pm 360n$

$\text{Sec}^{-1}(-1.342) = \{ 138.173 \pm 360n$
$-138.173 \pm 360n$

$\text{Csc}^{-1}\ 7.642 = \{ 7.519 \pm 360n$
$172.481 \pm 360n$

8. If $\bar{s} = 4\bar{i} - 21\bar{j}$ and $\bar{r} = 12\bar{i} - 5\bar{j}$, find:

a. $2\bar{s} - 3\bar{r}$

$2(4\vec{i} - 21\vec{j}) - 3(12\vec{i} - 5\vec{j})$

$= -28\vec{i} - 27\vec{j}$

b. $|\bar{r} - 4\bar{s}|$

$= |-4\vec{i} + 79\vec{j}|$

$= \sqrt{4^2 + 79^2} = \sqrt{6257}$

$= 79.101$

c. The unit vector in the direction $\bar{r}$

$$\frac{12\vec{i} - 5\vec{j}}{\sqrt{12^2 + 5^2}} = \frac{12}{13}\vec{i} - \frac{5}{13}\vec{j}$$

8. A boat sails 31 mph at a bearing of 133°. The current flows 6 mph at 215°. Find the magnitude and bearing of the resultant vector.

$31\cos 133°\,\vec{i} + 31\sin 133°\,\vec{j}$

$6\cos 215\,\vec{i} + 6\sin 215°\,\vec{j}$

$-26.057\vec{i} + 19.231\vec{j}$

$|\vec{r}| = \sqrt{26.057^2 + 19.231^2}$

$= 33.385$

$\theta = +\cos^{-1}\frac{-26.057}{33.385} = 143.572°$

9. Identify the Quadrant and reference angle of each of these:

a. 485° $= 125°$ QII $\theta_{REF} = 55°$

b. −172° $= 188°$ QIII $\theta_{REF} = 8°$

c. 14537° $= 137°$ QII $\theta_{REF} = 43°$

d. −1231° $= 209°$ QIII $\theta_{REF} = 29°$