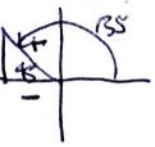
KEY B

Name: _____
Precalculus
Test through 5.2
Exact values of trig functions

Find the exact value. Do not use a calculator.

1) $\sin \frac{11\pi}{4} = \frac{\sqrt{2}}{2}$

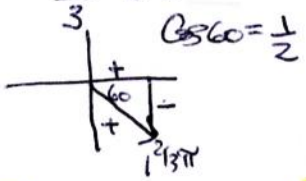
$\frac{11}{4} = 2\frac{3}{4} \rightarrow \frac{3\pi}{4} = 135^\circ$



2) $\cos \frac{11\pi}{3} = \frac{1}{2}$

$\frac{11}{3} = 3\frac{2}{3} \rightarrow 1\frac{2}{3}\pi$

$\cos 60 = \frac{1}{2}$



3) $\tan \frac{15\pi}{3} = 0$

$= 5\pi \rightarrow \pi = 180$

$\frac{\sin 180}{\cos 180} = \frac{0}{-1} = 0$

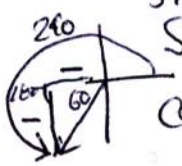
4) $\cot(30^\circ) = \sqrt{3}$

$\cot 30 = \frac{\cos 30}{\sin 30} = \frac{\sqrt{3}/2}{1/2}$

5) $\csc(240^\circ) = \frac{-2\sqrt{3}}{3}$

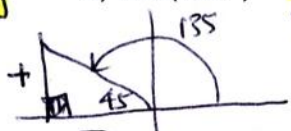
$\sin 240 = -\frac{\sqrt{3}}{2}$

$\sin 60 = \frac{\sqrt{3}}{2}$



$\csc 240 = \frac{-2}{\sqrt{3}}$

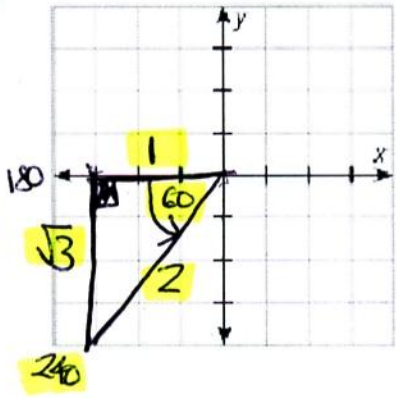
6) $\sec(135^\circ) = -\sqrt{2}$



$\cos 45 = \frac{\sqrt{2}}{2}$ $\cos 135 = -\frac{\sqrt{2}}{2}$ $\sec 135 = \frac{-2}{\sqrt{2}} = -\sqrt{2}$

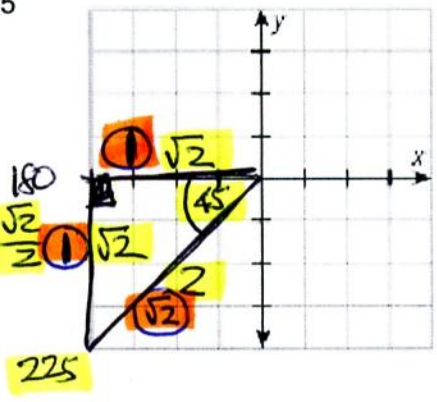
Draw reference triangles for these angles. Find and label the lengths of all three sides. Use the values 0, 1, 2, $\sqrt{2}$, or $\sqrt{3}$ for the lengths.

7) 240°



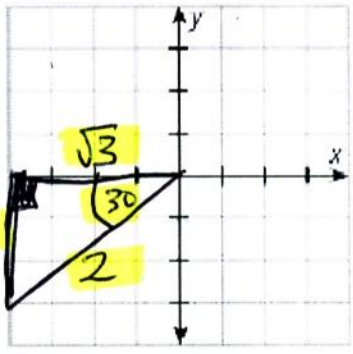
$\cos 60 = \frac{1}{2}$

8) 225°



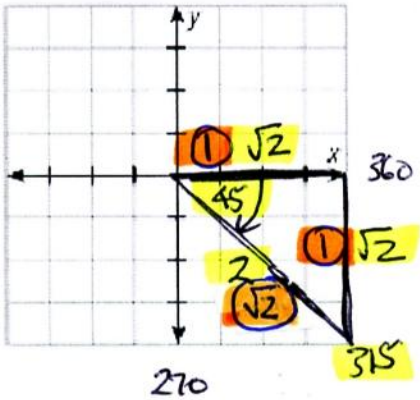
$\sin 45 = \frac{\sqrt{2}}{2}$

9) 210°



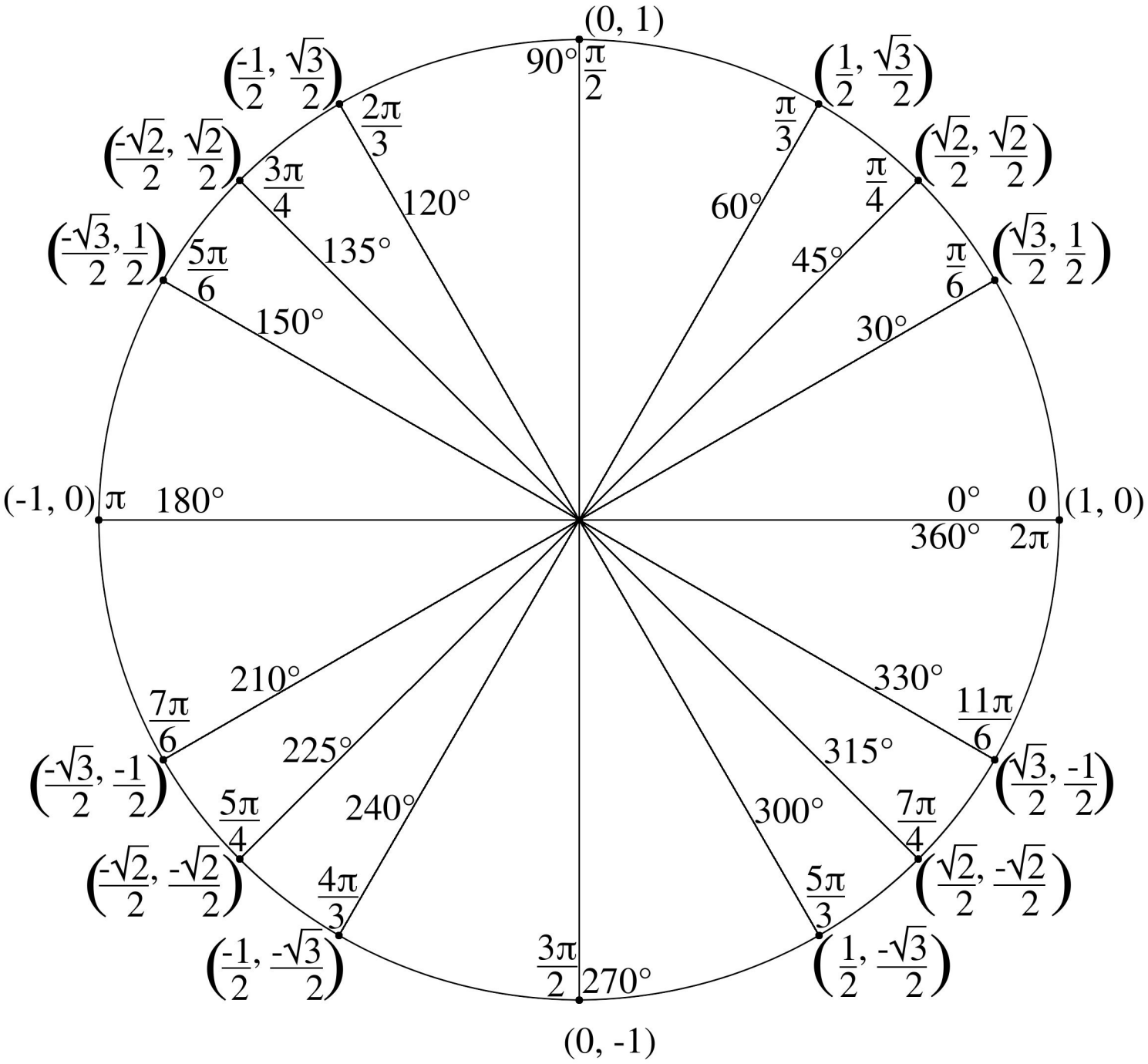
$\sin 30 = \frac{1}{2}$

10) 315°



$\sin 45 = \frac{\sqrt{2}}{2}$

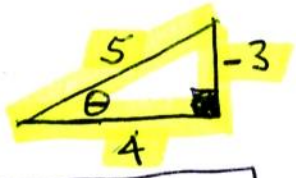
The Unit Circle



B

Find the exact value of the remaining 5 trigonometric functions.

11) $\sin\theta = \frac{-3}{5}$ $\sqrt{25-9} = \sqrt{16} = 4$



$\cos\theta = \frac{4}{5}$

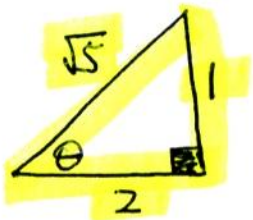
$\tan\theta = \frac{-3}{4}$

$\cot\theta = \frac{-4}{3}$

$\sec\theta = \frac{5}{4}$

$\csc\theta = \frac{-5}{3}$

12) $\tan\theta = \frac{1}{2}$ $\sqrt{2^2+1^2} = \sqrt{5}$



$\sin\theta = \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5} = \sin\theta$

$\cos\theta = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5} = \cos\theta$

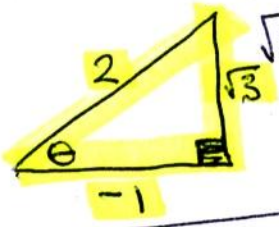
$\cot\theta = 2$

$\sec\theta = \frac{\sqrt{5}}{2}$

$\csc\theta = \sqrt{5}$

13) $\sec\theta = -2 \Rightarrow \cos\theta = \frac{-1}{2}$

$\sqrt{2^2-1^2} = \sqrt{4-1} = \sqrt{3}$



$\cos\theta = -\frac{1}{2}$

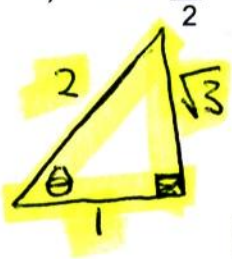
$\sin\theta = \frac{\sqrt{3}}{2}$

$\tan\theta = -\sqrt{3}$

$\cot\theta = \frac{-1}{\sqrt{3}} = \frac{-\sqrt{3}}{3} = \cot\theta$

$\csc\theta = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} = \csc\theta$

14) $\cos\theta = \frac{1}{2}$ $\sqrt{2^2-1^2} = \sqrt{4-1} = \sqrt{3}$



$\sin\theta = \frac{\sqrt{3}}{2}$

$\tan\theta = \sqrt{3}$

$\cot\theta = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} = \cot\theta$

$\csc\theta = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} = \csc\theta$

$\sec\theta = 2$