Math 130 - Quiz 2 IC

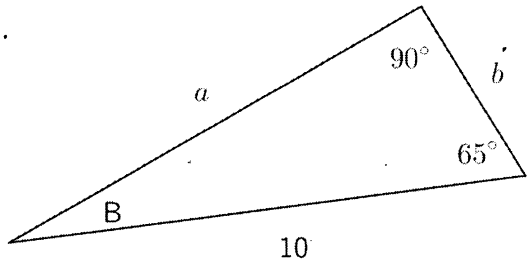
Name key

September 2, 2020

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) Consider the right triangle shown below.



(a) Determine the measure of the angle labeled B.

$m(\angle B) = 180° - (90° + 65°)$

$= \boxed{25°}$

(b) Use your calculator and an appropriate trigonometric function to compute the side length, a. Round to the nearest hundredth.

$\cos 25° = \frac{a}{10} \Rightarrow a = 10 \cos 25° \approx \boxed{9.06}$

(c) Use your calculator and an appropriate trigonometric function to compute the side length, b. Round to the nearest hundredth.

$\sin 25° = \frac{b}{10} \Rightarrow b = 10 \sin 25° \approx \boxed{4.23}$

2. (2 points) The angle α is the smallest angle of a certain right triangle, and $\sec\alpha = \sqrt{73}/8$.

(a) Compute $\sin\alpha$.

$\sec\alpha = \frac{\sqrt{73}}{8} \Rightarrow \cos\alpha = \frac{8}{\sqrt{73}}$

$\sin^2\alpha + \cos^2\alpha = 1$

$\Rightarrow \sin^2\alpha = 1 - \frac{64}{73} = \frac{9}{73}$

$\Rightarrow \boxed{\sin\alpha = \frac{3}{\sqrt{73}}}$

(b) Suppose α and β ~~and~~ ARE complementary angles. Compute $\csc\beta$.

COFUNCTIONS AT COMPLEMENTARY $\angle$'s ARE EQUAL $\Rightarrow \sec\alpha = \csc\beta \Rightarrow \boxed{\csc\beta = \frac{\sqrt{73}}{8}}$

Math 130 - Quiz 2 TH

Name key

September 2, 2020

Score _____

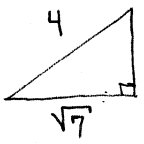
Show all work to receive full credit. Supply explanations when necessary. You must work individually on this quiz. The quiz is due September 9.

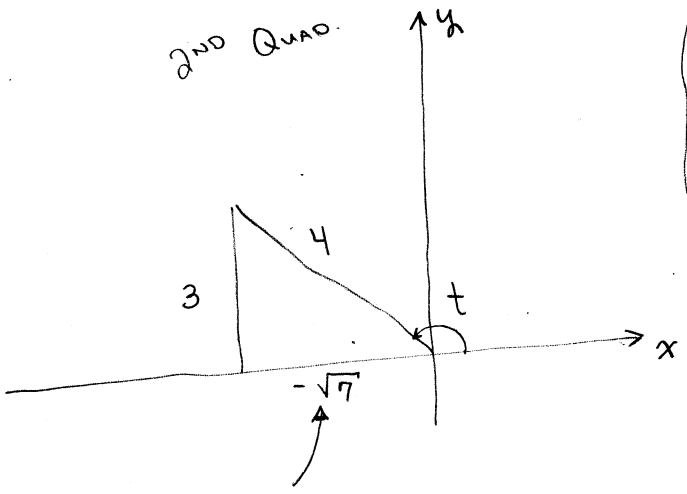
1. (1 point) If $\tan t \approx 2.755$ and $\sin t \approx 0.940$, estimate the value of $\cos t$. Round to the nearest thousandth.

$$\text{TAN } t = \frac{\text{SIN } t}{\cos t} \Rightarrow \cos t = \frac{\text{SIN } t}{\text{TAN } t}$$

$$\cos t \approx \frac{0.940}{2.755} \approx 0.341$$

2. (2 points) Suppose t is a 2nd quadrant angle with $\sin t = 3/4$. Find the exact values of $\cos t$, $\tan t$, and $\csc t$.





$$-\sqrt{16-9} = -\sqrt{7}$$

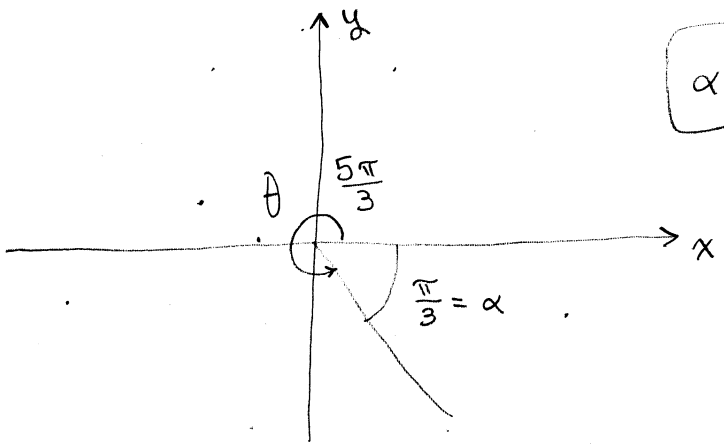
$$\cos t = \frac{-\sqrt{7}}{4}$$

$$\text{TAN } t = \frac{3}{-\sqrt{7}}$$

$$\csc t = \frac{4}{3}$$

3. (2 points) Let θ be the angle in standard position that has radian measure $5\pi/3$.

(a) Let α be the reference angle for θ. Compute α.



$\alpha = \frac{\pi}{3}$

(b) Determine the exact value of $\csc \alpha$.

$$\csc \alpha = \frac{1}{\sin \alpha} = \frac{1}{\sin \frac{\pi}{3}} = \frac{1}{\sqrt{3}/2} = \frac{2}{\sqrt{3}}$$

(c) Explain how the reference angle and your result from part (b) can be used to obtain $\csc \theta$.

$\frac{5\pi}{3}$ IS IN QUAD 4, WITH THE REFERENCE ANGLE, $\frac{\pi}{3}$.

THE COSECANT IS NEG. IN QUAD 4.

$$\csc \frac{5\pi}{3} = -\csc \frac{\pi}{3} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3}$$

≈ -1.1547