**Pre-Calculus** **Name** _____
**Review Ch. 4.1-4.3, 5.5-5.6**

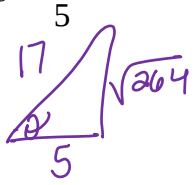
**Convert to degrees or radians. Round to the nearest hundredth where necessary.**

1) 2 radians $\left(\frac{180^\circ}{\pi}\right) = \left(\frac{360}{\pi}\right)^\circ \approx 114.59^\circ$

2) 82 degrees $\left(\frac{\pi}{180}\right) = \frac{41\pi}{90} \approx \boxed{1.43}$

**Assume that $\theta$ is an acute angle in a right triangle satisfying the given conditions. Evaluate the remaining trigonometric functions.**

3) $\sec\theta = \frac{17}{5}$

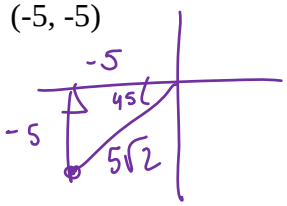



$\sin\theta = \frac{\sqrt{264}}{17}$ $\cos\theta = \frac{5}{17}$ $\tan\theta = \frac{\sqrt{264}}{5}$

$\csc\theta = \frac{17}{\sqrt{264}}$ $\cot\theta = \frac{5}{\sqrt{264}}$

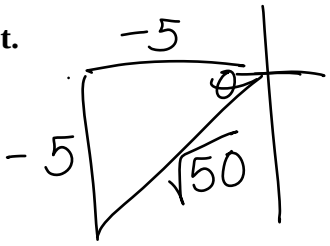
**Find the 6 trig functions for an angle whose terminal side contains the given point.**

4) (-5, -5)




$\sin\theta = \frac{-\sqrt{2}}{2}$ $\left(\frac{-5}{\sqrt{50}}\right)$ $\cos\theta = \frac{-\sqrt{2}}{2}$ $\tan\theta = 1$

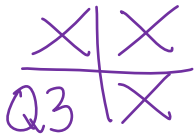
$\csc\theta = \frac{-\sqrt{2}}{1}$ $\cot\theta = 1$



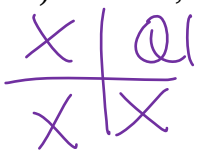


**Identify in which quadrant the angle is located.**

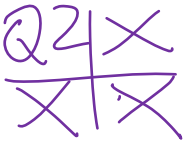
5) $\tan\theta > 0,\ \sin\theta < 0$




6) $\csc\theta > 0, \sec\theta > 0$

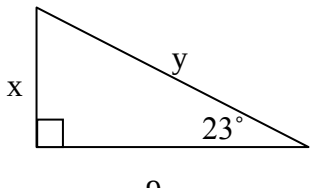



7) $\cot\theta < 0, \cos\theta < 0$




**Solve for the variables shown.**

8)



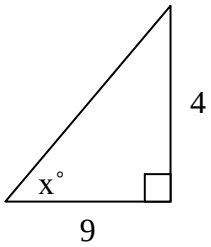

$\tan 23^\circ = \frac{x}{9}$

$x = 3.82$

$\cos 23^\circ = \frac{9}{y}$

$y = \frac{9}{\cos 23} = 9.78$

9)




$\tan x^\circ = \frac{4}{9}$

$x = \tan^{-1}\left(\frac{4}{9}\right)$

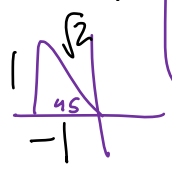
$x = 23.96^\circ$

10) Find a positive and negative angle that are coterminal with the angle $\theta = \frac{2\pi}{3}$.

$\frac{2\pi}{3} + \frac{6\pi}{3} = \frac{8\pi}{3}$ $\frac{2\pi}{3} - \frac{6\pi}{3} = \frac{-4\pi}{3}$

**NO Calculator. Find the trigonometric ratio.**

11) $\sin\frac{3\pi}{4}$



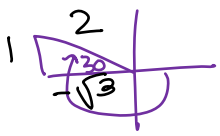

$\frac{\sqrt{2}}{2}$

$\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

12) $\cos\frac{\pi}{2}$


0

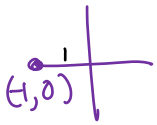
13) $\sec\left(-\frac{7\pi}{6}\right)$




$-\frac{2}{\sqrt{3}}$

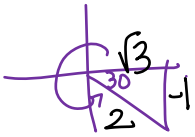
$\tan\theta = \frac{\sin\theta}{\cos\theta}$

14) $\tan\pi$



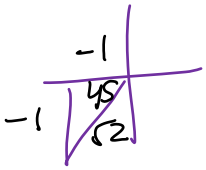

0

15) $\sin\left(\frac{11\pi}{6}\right)$




$-\frac{1}{2}$

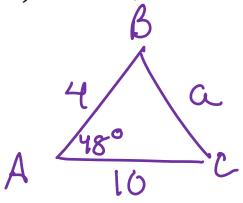
16) $\cot\frac{5\pi}{4}$




1

**Solve the triangle. Then find the area of the triangle. Round to the nearest hundredth. If there are two triangles, you must solve each of them.**

17) $\Delta ABC,\ m\angle A = 48°,\ b = 10,\ c = 4$




SAS - Cosines

$a^2 = 4^2 + 10^2 - 2(4)(10)\cos 48°$

$a = 7.90$

$\angle C$ (smaller)

$\frac{\sin 48°}{a} = \frac{\sin \angle C}{4}$

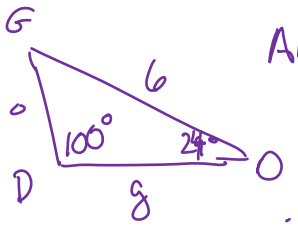
$m\angle C = 22.09°$

$m\angle B = 180 - 48 - 22.09$

$m\angle B = 109.91°$

Area $= \frac{1}{2}(10)(4)\sin 48° = 14.86$

18) $\Delta DOG,\ m\angle D = 100°,\ m\angle O = 24°,\ d = 6$




AAS - Sines

$m\angle G = 56°$

$\frac{\sin 100°}{6} = \frac{\sin 24°}{o}$

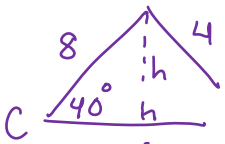
$o = 2.48$

$\frac{\sin 100°}{6} = \frac{\sin 56°}{g}$

$g = 5.05$

Area $= \frac{1}{2}(6)(g)\sin 24° = 6.16\ in^2$

19) $\Delta CAT$, $m\angle C = 40°$, $a = 8$, $c = 4$

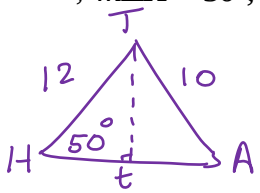



ASS - how many △s?

$h = 8\sin 40° = 5.14 > 4$

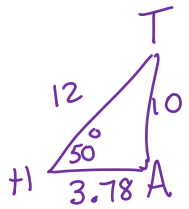
No △!

20) $\Delta HAT$, $m\angle H = 50°$, $a = 12$, $h = 10$




$h = 12\sin 50° = 9.2 < 10$

2 △s




$m\angle T$ smaller:

$\frac{\sin 50°}{10} = \frac{\sin T}{3.78}$

$m\angle T = 16.82°$

$m\angle A = 113.18°$

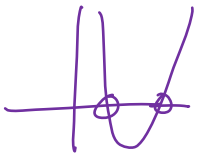
Area $= \frac{1}{2}(3.78)(12)\sin 50°$

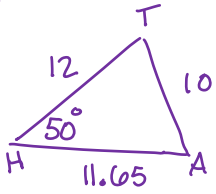
$= 17.36$

$10^2 = t^2 + 12^2 - 2(12)(t)\cos 50°$

$0 = t^2 - (24\cos(50))t + 44$

$t = 3.78, 11.65$






$m\angle T$ smaller:

$\frac{\sin 50}{10} = \frac{\sin T}{11.65}$

$m\angle T = 63.18°$

$m\angle A = 66.82°$

Area $= \frac{1}{2}(12)(11.65)\sin 50°$

$= 54.55$

**Find the bearing. Compass rose will be given.**


21) NNW $360° - 22.5° = 337.5°$

22) SE $90 + 45 = 135°$

23) ENE $90 - 22.5 = 67.5°$