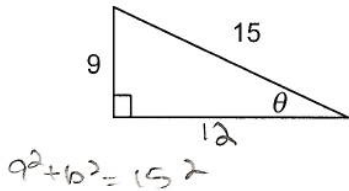


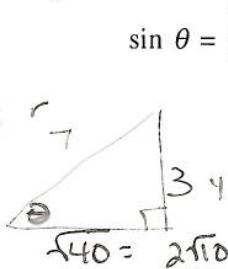
SECTION 13.1

1) Evaluate the six trigonometric functions of the angle θ . Leave answers in simplified exact form.



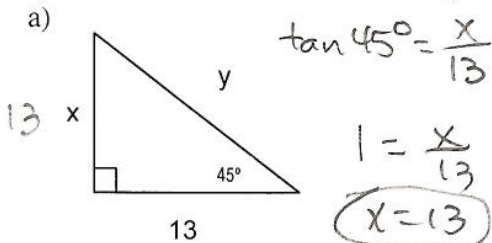
$$\begin{aligned} \sin \theta &= \frac{9}{15} = \frac{3}{5} & \csc \theta &= \frac{15}{9} = \frac{5}{3} \\ \cos \theta &= \frac{12}{15} = \frac{4}{5} & \sec \theta &= \frac{15}{12} = \frac{5}{4} \\ \tan \theta &= \frac{9}{12} = \frac{3}{4} & \cot \theta &= \frac{12}{9} = \frac{4}{3} \end{aligned}$$

2) Let θ be an acute angle of a right triangle. Find the value of the other five trig functions of θ .



$$\begin{aligned} \sin \theta &= \frac{3}{5} \quad \frac{\text{opp}}{r} & \csc \theta &= \frac{5}{3} \\ \cos \theta &= \frac{4}{5} & \sec \theta &= \frac{5}{4} \\ \tan \theta &= \frac{3}{4} & \cot \theta &= \frac{4}{3} \end{aligned}$$

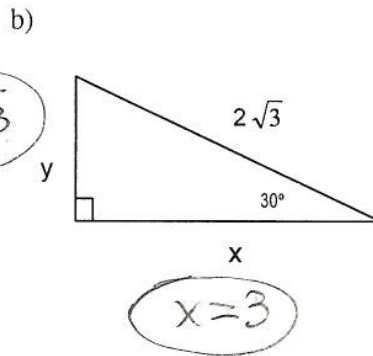
3) Find the exact values of x and y .



$\sin 45 = \frac{13}{y}$

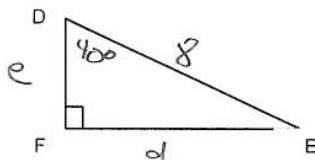
$y = 18.4$

$1 = \frac{x}{13}$
 $x = 13$



$x = 3$

4) Solve $\triangle DEF$ using the diagram and the given measurements. Do not use the Law of Sines or Cosines.



$D = 40^\circ, f = 8$

$e: \cos 40^\circ = \frac{e}{8}$

$e = 6.13$

$m\angle E = 50^\circ$
 $d = 5.14$
 $e = 6.13$

$m\angle E = 50^\circ$

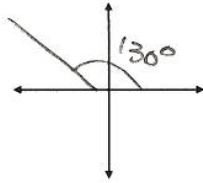
$d: \sin 40^\circ = \frac{d}{8}$

$d = 5.14$

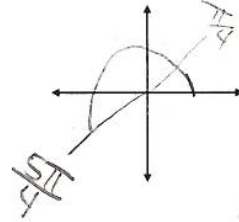
SECTION 13.2

5) Draw an angle with the given measure in standard position.

a) 130°



b) $\frac{5\pi}{4}$



6) Find one positive angle and one negative angle that are co-terminal with the given angle.

a) $-35^\circ \pm 360 = \boxed{325^\circ, -395^\circ}$

b) $\frac{7\pi}{5} \pm \frac{10\pi}{5} = \boxed{\frac{17\pi}{5}, -\frac{3\pi}{5}}$

7) Convert the degree measure to radians and the radian measure to degrees.

a) $270^\circ \cdot \frac{2\pi}{360} = \boxed{\frac{3\pi}{2}}$

b) $-\frac{\pi}{18} \cdot \frac{180}{\pi} = -10^\circ$

SECTION 13.3

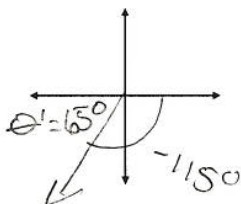
8) Use the given point on the terminal side of an angle θ in standard position to evaluate the six trigonometric functions of θ .

$(-7, -2)$

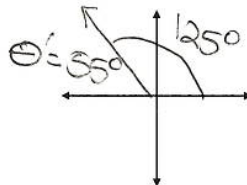
$\tan \theta = \frac{2}{7}$	$\sin \theta = \frac{-2}{\sqrt{53}} = -\frac{2\sqrt{53}}{53}$	$\cos \theta = \frac{-7}{\sqrt{53}} = -\frac{7\sqrt{53}}{53}$
$\cot \theta = \frac{7}{2}$	$\csc \theta = -\frac{\sqrt{53}}{2}$	$\sec \theta = -\frac{\sqrt{53}}{7}$

9) Sketch the angle. Then find its reference angle.

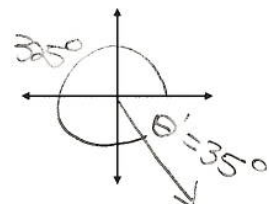
-115°



125°



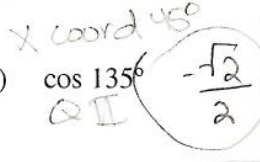
325°



REMEMBER: $x = \cos$ $y = \sin$ $r = 1$

10) Evaluate the function without using a calculator. (Know your special right triangles)

a) $\cos 135^\circ$



Q III

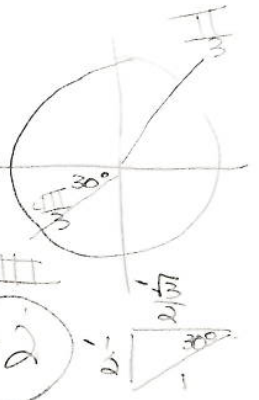
b) $\sin 210^\circ$



c) $\sec\left(\frac{4\pi}{3}\right)$

$\cos = \frac{x}{r}$
 $\sec = \frac{r}{x}$

$\cos = \frac{1}{-2}$ $\sec = \frac{1}{-1/2}$



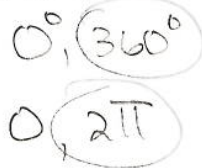
SECTION 13.4

11) Evaluate the expression without using a calculator. Give your answer in both radians and degrees.

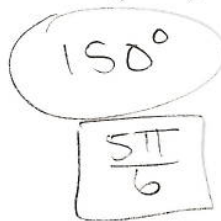
a) $\cos^{-1}(-1)$



b) $\sin^{-1}(0)$



c) $\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)$



d) $\tan^{-1}(-\sqrt{3})$



12) Solve the equation for θ . Show work.

a) $\sin \theta = -0.71$ $270^\circ < \theta < 360^\circ$

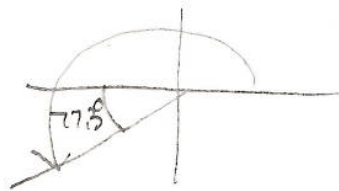
$\sin^{-1} -0.71$

-45.23°

$\theta = 314.77^\circ$

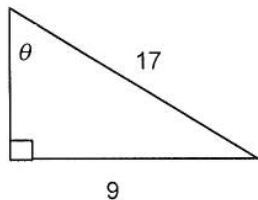
b) $\cos \theta = +0.22$ $180^\circ < \theta < 270^\circ$

$\cos^{-1} .22 =$



$180 + 77.3 = 257.3^\circ$

13) Find the measure of the angle θ .



$\sin \theta = \frac{9}{17}$

$\sin^{-1} \frac{9}{17} = 32^\circ$

$\theta = 32^\circ$

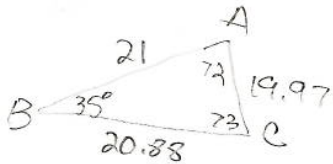
lee

SECTION 13.5

Solve $\triangle ABC$.

14) $A = 72^\circ, B = 35^\circ, c = 21$

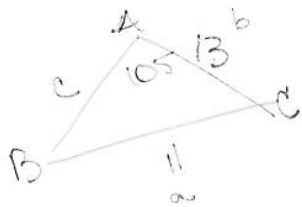
need $\angle C = 73^\circ$
 $b = 12.6$
 $a = 20.88$



$$\frac{\sin 72^\circ}{a} = \frac{\sin 73^\circ}{21}$$

$$\frac{\sin 35^\circ}{b} = \frac{\sin 73^\circ}{21}$$

15) $A = 105^\circ, a = 11, b = 13$

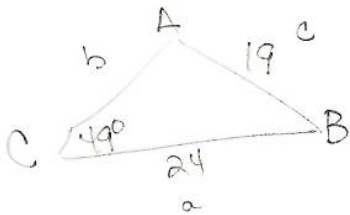


$$\frac{\sin 105^\circ}{11} = \frac{\sin B}{13}$$

$$\sin B = 1.14$$

can't happen

16) $C = 49^\circ, a = 24, c = 19$ Ass ✓ for 2nd \triangle $m\angle A = 72.42^\circ$ $m\angle B = 58.6^\circ$ $b = 21.5$



$$\frac{\sin 49^\circ}{19} = \frac{\sin A}{24}$$

$$\sin^{-1}(.9533) = 72.42^\circ$$

$$\frac{\sin 49^\circ}{19} = \frac{\sin 58.6^\circ}{b}$$

1 st \triangle	? 2 nd \triangle
$m\angle C 49^\circ$	$m\angle C 49^\circ$
$m\angle A 72.42^\circ$	$m\angle A 107.6^\circ$
$m\angle B 58.6^\circ$	$m\angle B 23.4^\circ$

17) Find the area of $\triangle ABC$ given: $B = 141^\circ, a = 7, c = 8$

$$A = \frac{1}{2} ac \sin B$$

$$A = \frac{1}{2} \cdot 7 \cdot 8 \cdot \sin 141^\circ$$

$$A = 17.62 \text{ units}^2$$

SECTION 13.6

Solve $\triangle ABC$.

18) $a = 12, b = 13, c = 20$

① $12^2 = 13^2 + 20^2 - 2 \cdot 13 \cdot 20 \cos A$
 $144 = 569 - 520 \cos A$
 $-425 = -520 \cos A$
 $.817 = \cos A$
 $\cos^{-1}.817 = 35^\circ$

② $\frac{\sin 35^\circ}{12} = \frac{\sin B}{13}$
 $\sin B = .62$
 $\sin^{-1}.62 = 38^\circ$

$m\angle A = 35^\circ$
 $m\angle B = 38^\circ$
 $m\angle C = 107^\circ$

19) $A = 46^\circ, b = 24, c = 10$

① $a^2 = 24^2 + 10^2 - 2 \cdot 24 \cdot 10 \cdot \cos 46^\circ$
 $a^2 = 676 - 480 \cdot \cos 46^\circ$
 $a^2 = 342.56$
 $a = 18.5$

② $\frac{\sin 46^\circ}{18.5} = \frac{\sin B}{24}$
 $\sin B = .93$
 $\sin^{-1}.93 = 69^\circ$

$m\angle B = 69^\circ$
 $m\angle C = 65^\circ$
 $a = 18.5$

2nd \triangle ? ~~yes~~
 $m\angle A = 46^\circ$
 $m\angle B = 111^\circ$
 $m\angle C = 23^\circ$

③ $180 - 46 - 69 = \angle C$

20) Find the area of $\triangle ABC$ given: $a = 6, b = 8, c = 12$

$s = \frac{1}{2}(6+8+12)$
 $= \frac{1}{2}(26)$
 $s = 13$

$A = \sqrt{13(7)(5)(1)}$
 $A = 21.33 \text{ units}^2$

Review story problems from Chapter 13 Quiz. There will be story problems on the test.

This test will have two parts. The non-calculator part will be formatted like it was for the quiz.