

Ch. 7 Test Prep

$$\begin{aligned} 1.) \quad \sin \theta &= \frac{3}{3\sqrt{5}} = \frac{\sqrt{5}}{5} & \tan \theta &= \frac{1}{2} & \csc \theta &= \sqrt{5} \\ \cos \theta &= \frac{2\sqrt{5}}{5} & \cot \theta &= 2 & \sec \theta &= \frac{\sqrt{5}}{2} \\ c &= \sqrt{3^2 + 6^2} = \sqrt{45} = \underline{3\sqrt{5}} \end{aligned}$$

$$2.) \quad \cos(50^\circ) - \cos(50^\circ) = \boxed{0}$$

$$3.) \quad \begin{array}{c} 12 \\ \triangle \\ 10.5 \end{array} \quad \theta = \sin^{-1}(10.5/12) = \boxed{61^\circ}$$

$$4.) \quad \begin{array}{c} 600 \text{ ft} \\ \triangle \\ 5 \text{ mi} \end{array} \quad \theta = \tan^{-1}(600/5.5280) = \tan^{-1}(600/26400) = \boxed{1.3^\circ}$$

$$5.) \quad a = \sqrt{17^2 + 19^2 - 2(17)(19)\cos 52^\circ} = \underline{15.88}$$

$$B = \cos^{-1} \left[\frac{19^2 + 15.88^2 - 17^2}{2(19)(15.88)} \right] = \underline{57.56^\circ}$$

$$\gamma = 180 - (52 + 57.56) = \underline{70.44^\circ}$$

$$6.) \quad \gamma = 180^\circ - (41^\circ + 22^\circ) = \boxed{117^\circ}$$

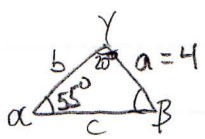
$$\frac{\sin 117}{c} = \frac{\sin 41^\circ}{12} \rightarrow c = \frac{12 \sin 117^\circ}{\sin 41^\circ} = \boxed{16.3}$$

$$\frac{\sin 22}{b} = \frac{\sin 41}{12} \rightarrow b = \frac{12 \sin 22^\circ}{\sin 41^\circ} = \boxed{6.85}$$

$$7.) \quad \alpha = \cos^{-1} \left[\frac{5^2 + 10^2 - 8^2}{2(5)(10)} \right] = \boxed{52.41^\circ}$$

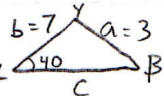
$$B = \cos^{-1} \left[\frac{10^2 + 8^2 - 5^2}{2(10)(8)} \right] = \boxed{29.67^\circ}$$

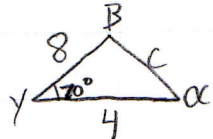
$$\gamma = 180 - (52.41 + 29.67) = \boxed{97.92^\circ}$$

8.) SAA  $\frac{\sin 55^\circ}{4} = \frac{\sin 20^\circ}{c}$ $c = \frac{4 \sin 20^\circ}{\sin 55^\circ} = \boxed{1.67}$

$\beta = 180 - (55 + 20) = \boxed{105^\circ}$

$\frac{\sin 105^\circ}{b} = \frac{\sin 55^\circ}{4} \rightarrow b = \frac{4 \sin 105^\circ}{\sin 55^\circ} = \boxed{4.72}$

9.)  $4.5 > 3$, so no triangle
 $b = 7 \sin 40^\circ = \underline{4.5}$

10.)  $c = \sqrt{8^2 + 4^2 - 2(8)(4) \cos 70^\circ} = \boxed{7.62}$

$\alpha = \cos^{-1} \left[\frac{4^2 + 7.62^2 - 8^2}{2(4)(7.62)} \right] = \boxed{80.5^\circ}$

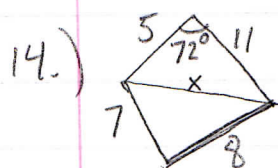
$\beta = 180 - (70 + 80.5) = \boxed{29.5^\circ}$

11.) $A = \frac{1}{2} (8)(4) \sin 70^\circ = \boxed{15.04 \text{ units}^2}$

12.) $S = \frac{1}{2} (5 + 8 + 10) = 11.5$

$\text{Area} = \sqrt{11.5(11.5 - 8)(11.5 - 5)(11.5 - 10)} = \boxed{19.81 \text{ units}^2}$

13.) $\text{Area} = 8.5(17) + \frac{1}{2} (17) \sqrt{12^2 - 8.5^2} = \boxed{216.5 \text{ in}^2}$

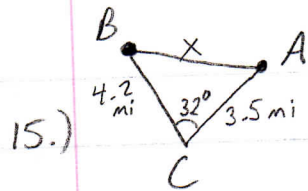


$x = \sqrt{5^2 + 11^2 - 2(5)(11) \cos 72^\circ} = \underline{10.58}$

$\text{Area} = \frac{1}{2} (5)(11) \sin 72^\circ + \sqrt{12.79(12.79 - 10.58)(12.79 - 7)(12.79 - 8)}$

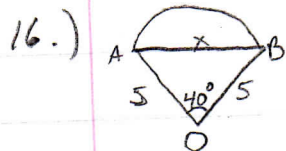
$\text{Area} = \boxed{54.15 \text{ units}^2}$

$S = \frac{1}{2} (7 + 8 + 10.58) = \underline{12.79}$



$$x = \sqrt{4.2^2 + 3.5^2 - 2(4.2)(3.5)\cos 32^\circ}$$

$$x = 2.23 \text{ mi}$$



$$x = \sqrt{5^2 + 5^2 - 2(5)(5)\cos 40^\circ} = 3.42$$

$$\text{Area} = \left[\frac{1}{2}(5)(5)\sin 40^\circ \right] + \left[\frac{\pi \left(\frac{3.42}{2} \right)^2}{2} \right]$$

$$\text{Area} = 12.63 \text{ units}^2$$

17.) $S = \frac{1}{2}(5x + 7x + 6x) = 9x$

$$54\sqrt{6} = \sqrt{9x(9x-5x)(9x-7x)(9x-6x)}$$

$$54\sqrt{6} = \sqrt{9x(4x)(2x)(3x)}$$

$$(54\sqrt{6})^2 = (\sqrt{216x^4})^2$$

$$\frac{17496}{216} = \frac{216x^4}{216}$$

$$81 = x^4 \rightarrow x = \sqrt[4]{81} = 3$$

side lengths: $5x, 6x, 7x \rightarrow 5(3), 6(3), 7(3) = 15, 18, 21$

Date	Description
1/1/2020	Initial deposit
1/15/2020	Withdrawal
2/1/2020	Interest
2/15/2020	Withdrawal
3/1/2020	Interest
3/15/2020	Withdrawal
4/1/2020	Interest
4/15/2020	Withdrawal
5/1/2020	Interest
5/15/2020	Withdrawal
6/1/2020	Interest
6/15/2020	Withdrawal
7/1/2020	Interest
7/15/2020	Withdrawal
8/1/2020	Interest
8/15/2020	Withdrawal
9/1/2020	Interest
9/15/2020	Withdrawal
10/1/2020	Interest