

Intro to Trig

1. a) $\frac{S/A}{T/C}$ b) $\frac{S/A}{T/C}$

c) $\frac{S/A}{T/C}$

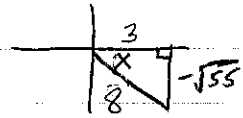
2. a) $\frac{8\pi}{5} = 1.6\pi$ $\boxed{\text{IV}}$ b) $543 - 360 = 183$ $\boxed{\text{II}}$

c) $\frac{23\pi}{7} = 3.3\pi$ $\boxed{\text{III}}$ d) $420 - 360 = 60$ $\boxed{\text{I}}$

3. a. $73^\circ + 360^\circ = \boxed{433^\circ}$ b. $\frac{4\pi}{7} + 2\pi = \frac{4\pi}{7} + \frac{14\pi}{7} = \frac{18\pi}{7}$
 $73^\circ - 360^\circ = \boxed{-287^\circ}$ $\frac{4\pi}{7} - 2\pi = \frac{4\pi}{7} - \frac{14\pi}{7} = \frac{-10\pi}{7}$


4. a. $\frac{8\pi}{3} \cdot \frac{180}{\pi} = \boxed{480^\circ}$ b. $-\frac{4\pi}{15} \cdot \frac{180}{\pi} = \boxed{-48^\circ}$

5. a. $125^\circ \cdot \frac{\pi}{180} = \frac{25\pi}{36}$ b. $-540^\circ \cdot \frac{\pi}{180} = \boxed{-3\pi}$

6.  $\sec x = \frac{8}{3}$ $3^2 + b^2 = 8^2$ $b^2 = 55$ $b = \sqrt{55}$
 $\cos x = \frac{3}{8}$ adj hyp $S = \frac{0}{1}$
 $T = \frac{0}{2}$

a) $-\frac{\sqrt{55}}{8}$ b) $\frac{3}{8}$ c) $\frac{\sqrt{55}}{3}$


d) $-\frac{8}{\sqrt{55}} \cdot \frac{\sqrt{55}}{\sqrt{55}} = -\frac{8\sqrt{55}}{55}$ e) $-\frac{3}{\sqrt{55}} \cdot \frac{\sqrt{55}}{\sqrt{55}} = -\frac{3\sqrt{55}}{55}$

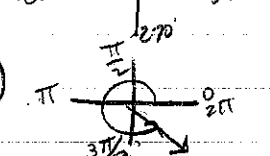
7.  $(-5)^2 + (-6)^2 = c^2$
 $61 = c^2$
 $c = \sqrt{61}$

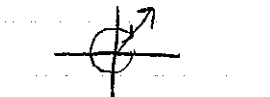
a) $-\frac{6}{\sqrt{61}} \cdot \frac{\sqrt{61}}{\sqrt{61}} = -\frac{6\sqrt{61}}{61}$ b) $-\frac{5}{\sqrt{61}} \cdot \frac{\sqrt{61}}{\sqrt{61}} = -\frac{5\sqrt{61}}{61}$

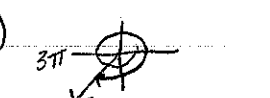
c) $\frac{-6}{-5} = \frac{6}{5}$ d) $-\frac{\sqrt{61}}{6}$

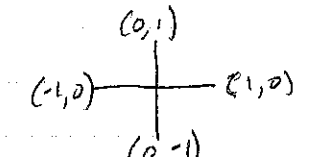
e) $-\frac{\sqrt{61}}{5}$ f) $\frac{-5}{-6} = \frac{5}{6}$

8. a)  $180 - 117 = \boxed{63^\circ}$

b)  $\frac{15\pi}{8} = 1.875\pi \quad 2\pi - \frac{15\pi}{8} = \frac{16\pi}{8} - \frac{15\pi}{8} = \boxed{\frac{\pi}{8}}$

c)  $-290^\circ \quad 360^\circ - 290^\circ = \boxed{70^\circ}$

d)  $-\frac{29\pi}{11} = -2.6\pi \quad 3\pi - \frac{29\pi}{11} = \frac{33\pi}{11} - \frac{29\pi}{11} = \boxed{\frac{4\pi}{11}}$

9.  $\sec = \frac{1}{\cos} \quad (\cos, \sin) \text{ where } \cos = 0, \sec = \frac{1}{0}$
 $\boxed{\frac{\pi}{2}, \frac{3\pi}{2}}$

10. Use the unit circle.

a) $\cos 720^\circ = \boxed{1}$ b) $\sec 150^\circ = \frac{-2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{-\frac{2\sqrt{3}}{3}}$

c) $\sin(-60^\circ) = \boxed{-\frac{\sqrt{3}}{2}}$ d) $\tan 225^\circ = 1$

e) $\csc 180^\circ = \frac{1}{0} = \boxed{\text{und.}}$ f) $\cot(-120^\circ) = \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = \frac{-1 \cdot 2}{2 \cdot \sqrt{3}} = \frac{1}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

g) $\cos \frac{8\pi}{3} - \frac{6\pi}{3} = \frac{2\pi}{3} = \boxed{-\frac{1}{2}}$ h) $\tan(-\frac{3\pi}{2}) = \frac{1}{0} = \boxed{\text{und.}}$

i) $\sec \frac{2\pi}{3} = \frac{1}{-\frac{1}{2}} = \boxed{-2}$ j) $\sin \frac{13\pi}{6} - \frac{12\pi}{6} = \frac{\pi}{6} = \boxed{\frac{1}{2}}$

k) $\csc \frac{7\pi}{3} - \frac{6\pi}{3} = \frac{\pi}{3} = \frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3} = \boxed{\frac{2\sqrt{3}}{3}}$ l) $\cot 6\pi - 4\pi = 2\pi = \frac{1}{0} = \boxed{\text{und.}}$

11. $\csc \theta > 0$ Pos. $\frac{\sqrt{S/A}}{T/C} = \boxed{\text{Quadrant II}}$
 $\cot \theta < 0$ Neg.

$$12. \quad 270^\circ + 80^\circ = \boxed{350^\circ}$$

$$13. \quad 2\pi + 2\pi + \pi - \frac{5\pi}{12} = 5\pi - \frac{5\pi}{12} = \frac{60\pi - 5\pi}{12} = \boxed{\frac{55\pi}{12}}$$

$$14. \quad \frac{\pi}{2} - \frac{\pi}{3} = \frac{3\pi}{6} - \frac{2\pi}{6} = \frac{\pi}{6} \quad \frac{\pi}{6} + 2\pi = \frac{\pi}{6} + \frac{12\pi}{6} = \boxed{\frac{13\pi}{6}}$$

$$15. \quad -435^\circ + 360^\circ = -75^\circ \quad -75^\circ + 360^\circ = \boxed{285^\circ}$$

$$16. \quad \frac{11\pi}{3} - \frac{6\pi}{3} = \boxed{\frac{5\pi}{3}}$$

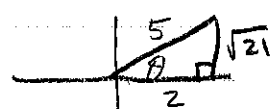
$$17. \quad -\frac{7\pi}{6} + 2\pi = -\frac{7\pi}{6} + \frac{12\pi}{6} = \boxed{\frac{5\pi}{6}}$$

$$-\frac{7\pi}{6} - \frac{12\pi}{6} = \boxed{-\frac{19\pi}{6}}$$

$$18. \quad 640^\circ - 360^\circ = \boxed{280^\circ}$$

$$280^\circ - 360^\circ = \boxed{-80^\circ}$$

19. $\sin \theta > 0$ is Positive $\sqrt{S} \mid A \sqrt{V}$
 $\tan \theta > 0$ is Positive $\sqrt{T} \mid C$



$$\cos \theta = \frac{2 \text{ adj}}{5 \text{ hyp}}$$

$$2^2 + b^2 = 5^2 \\ b^2 = 21 \quad b = \sqrt{21}$$

$$\sin \theta = \frac{\sqrt{21}}{5}$$

$$\cot \theta = \frac{2}{\sqrt{21}} \cdot \frac{\sqrt{21}}{\sqrt{21}} = \boxed{\frac{2\sqrt{21}}{21}}$$

$$\tan \theta = \frac{\sqrt{21}}{2}$$

$$\csc \theta = \frac{5}{\sqrt{21}} \cdot \frac{\sqrt{21}}{\sqrt{21}} = \boxed{\frac{5\sqrt{21}}{21}}$$

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