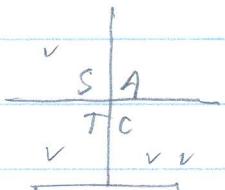
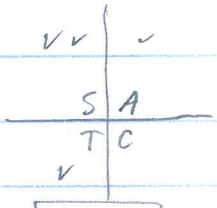
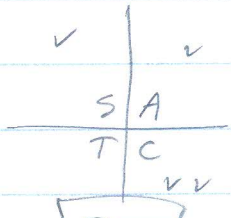
Intro to Trig

1. a) 

QIV

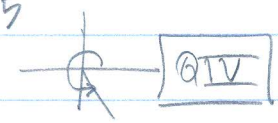
b) 

QII

c) 

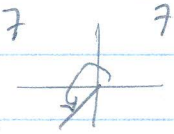
QIV

2. a) $\frac{8\pi}{5} \approx 1.6\pi$


QIV

b) $-543^\circ + 360^\circ$
$= -183^\circ + 360^\circ = 177^\circ$
QII

c) $\frac{23\pi}{7} - \frac{14\pi}{7} = \frac{9\pi}{7} \approx 1.3\pi$


QIII

d) $420^\circ - 360^\circ = 60^\circ$
QI

3. a) $73^\circ + 360^\circ = \boxed{433^\circ}$
$73^\circ - 360^\circ = \boxed{-287^\circ}$

b) $\frac{4\pi}{7} + \frac{14\pi}{7} = \boxed{\frac{18\pi}{7}}$

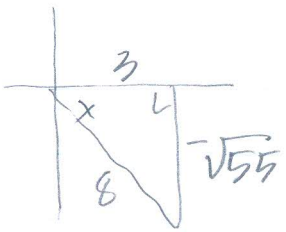
$\frac{4\pi}{7} - \frac{14\pi}{7} = \boxed{\frac{-10\pi}{7}}$

4. a) $\frac{8\pi}{3} \cdot \frac{180^\circ}{\pi} = \boxed{480^\circ}$

b) $-\frac{4\pi}{15} \cdot \frac{180^\circ}{\pi} = \boxed{-48^\circ}$

5. a) $125^\circ \cdot \frac{\pi}{180^\circ} = \boxed{\frac{25\pi}{36}}$

b) $-540^\circ \cdot \frac{\pi}{180^\circ} = \boxed{-3\pi}$

6. 

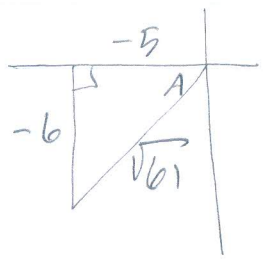
a) $\sin x = -\frac{\sqrt{55}}{8}$

b) $\cos x = \frac{3}{8}$

c) $\tan x = \frac{-\sqrt{55}}{3}$

d) $\csc x = \frac{-8}{\sqrt{55}} = -\frac{8\sqrt{55}}{55}$

e) $\cot x = -\frac{3}{\sqrt{55}} = -\frac{3\sqrt{55}}{55}$

7. 

a) $\sin A = -\frac{6\sqrt{61}}{61}$

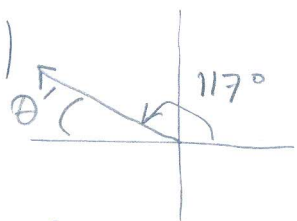
b) $\cos A = -\frac{5\sqrt{61}}{61}$

c) $\tan A = \frac{6}{5}$

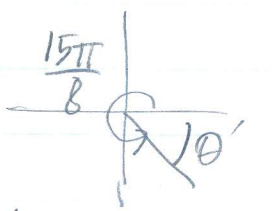
d) $\csc A = -\frac{\sqrt{61}}{6}$

e) $\sec A = -\frac{\sqrt{61}}{5}$

f) $\cot A = 5/6$

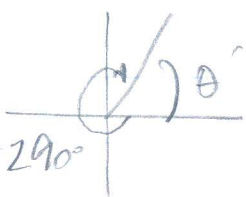
8. a) 

$\theta' = 180° - 117° = \boxed{63°}$

b) 

$\theta' = 2\pi - \frac{15\pi}{8} = \frac{16\pi - 15\pi}{8}$

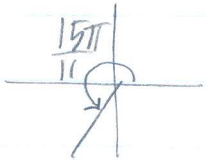
$\theta' = \boxed{\frac{\pi}{8}}$

c) 

$\theta' = 360° - 290° = \boxed{70°}$

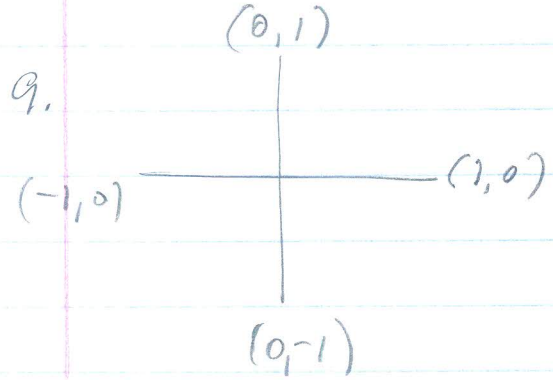
d) $-\frac{29\pi}{11} + \frac{22\pi}{11} = -\frac{7\pi}{11} + \frac{22\pi}{11}$

Coterminal $\angle = \frac{15\pi}{11}$



$\theta' = \frac{15\pi}{11} - \pi$

$= \boxed{\frac{4\pi}{11}}$

9. 

$\sec x = \frac{1}{\cos x}$

$\sec x = \frac{1}{0}$ at $\boxed{\frac{\pi}{2} ; \frac{3\pi}{2}}$

10. a) $\cos 720° = \cos 360° = \boxed{1}$

b) $\sec 150° = \frac{-2}{\sqrt{3}} = \boxed{\frac{-2\sqrt{3}}{3}}$ $\cos 150° = \frac{-\sqrt{3}}{2}$

c) $\sin(-60°) = \sin 300° = \boxed{-\frac{\sqrt{3}}{2}}$

d) $\tan 225° = \frac{-\sqrt{2}/2}{-\sqrt{2}/2} = \boxed{1}$

e) $\csc 180° = \frac{1}{0} = \boxed{\text{undefined}}$

f) $\cot(-120°) = \cot 240° = \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}} = -\frac{1}{2} \cdot \frac{-2}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$

g) $\cos \frac{8\pi}{3} = \cos \frac{2\pi}{3} = \boxed{-\frac{1}{2}}$

$\frac{8\pi}{3} - 2\pi = \frac{2\pi}{3}$

h) $\tan\left(\frac{-3\pi}{2}\right) = \tan\frac{\pi}{2} = \frac{1}{0} =$ undefined.

i) $\sec\frac{2\pi}{3} = \boxed{-2}$ ✓ $\qquad \cos\frac{2\pi}{3} = \frac{-1}{2}$

j) $\sin\frac{13\pi}{6} = \sin\frac{\pi}{6} = \boxed{\frac{1}{2}}$

k) $\csc\frac{7\pi}{3} = \csc\frac{\pi}{3} = \frac{2}{\sqrt{3}} = \boxed{\frac{2\sqrt{3}}{3}}$ $\qquad \sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

l) $\cot 6\pi = \cot 2\pi = \frac{1}{0} =$ undefined

11.

csc > 0 cot < 0 S	A csc > 0
T	C cot < 0

Quadrant $\boxed{\text{II}}$

12. $270° + 80° = \boxed{350°}$

13. $\frac{12}{12}\cdot 5\pi - \frac{5\pi}{12} = \boxed{\frac{55\pi}{12}}$

14. $\frac{5\pi}{2} - \frac{\pi}{3} = \frac{15\pi}{6} - \frac{2\pi}{6} = \frac{13\pi}{6} \rightarrow \boxed{-\frac{13\pi}{6}}$

15. $-435° + 360° = -75° + 360° = \boxed{285°}$

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

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

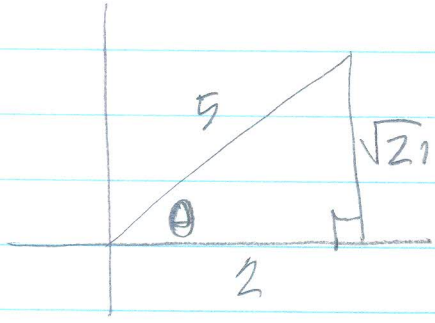
$-\frac{7\pi}{6} - \frac{12\pi}{6} = \boxed{-\frac{19\pi}{6}}$

answers may vary

18. $640° - 360° = \boxed{280°}$

$280° - 360° = \boxed{-80°}$

19.



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

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

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