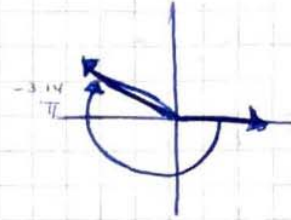
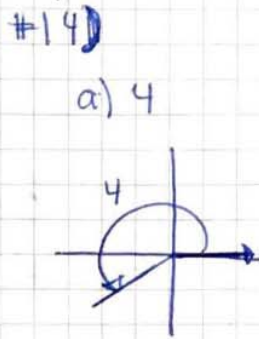
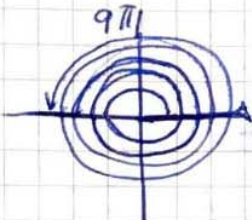
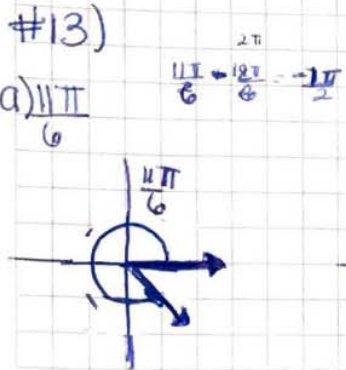
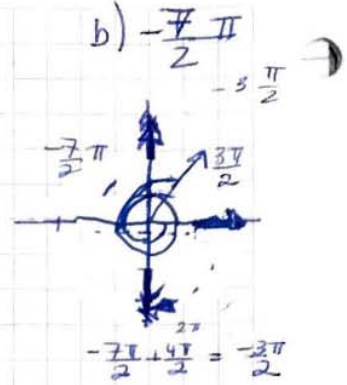
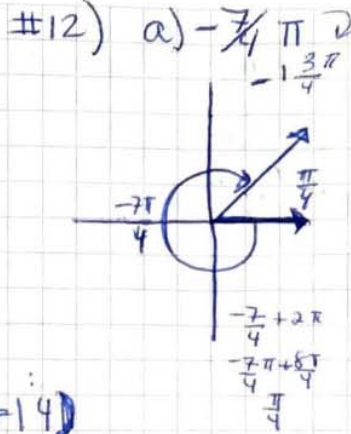
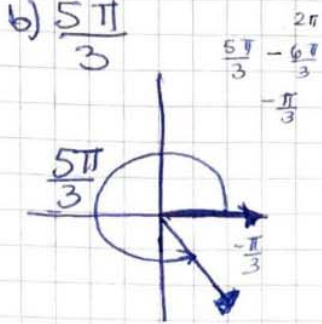
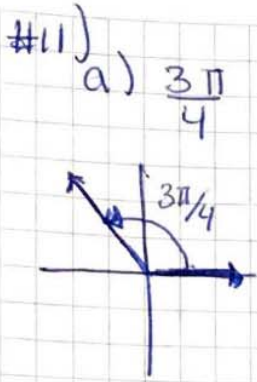


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#15) a) Coterminal  $\angle$  for  $\frac{\pi}{2}$

$$\frac{\pi}{12} + 2\pi = \frac{25\pi}{12}$$

$$\frac{\pi}{12} + \frac{24\pi}{12} = \frac{25\pi}{12}$$

$$\frac{\pi}{12} - 2\pi = \frac{-23\pi}{12}$$

$$\frac{\pi}{12} - \frac{24\pi}{12} = \frac{-23\pi}{12}$$

b) Coterminal  $\angle$  for  $\frac{2\pi}{3}$

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

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

#16) a) Coterminal  $\angle$  for  $\frac{7\pi}{6}$

$$\frac{7\pi}{6} + \frac{12\pi}{6} = \frac{19\pi}{6}$$

$$\frac{7\pi}{6} - \frac{12\pi}{6} = \frac{-5\pi}{6}$$

b) Coterminal  $\angle$  for  $-\frac{11\pi}{6}$

$$-\frac{11\pi}{6} + 2\pi \rightarrow -\frac{11\pi}{6} + \frac{12\pi}{6} = \frac{\pi}{6}$$

$$-\frac{11\pi}{6} - \frac{12\pi}{6} = \frac{-23\pi}{6}$$

#17) a) Coterminal  $\angle$  for  $-\frac{11\pi}{4}$

$$-\frac{11\pi}{4} + \frac{8\pi}{4} = \frac{-3\pi}{4}$$

$$-\frac{11\pi}{4} - \frac{8\pi}{4} = \frac{-19\pi}{4}$$

b) Coterminal  $\angle$  for  $-\frac{2\pi}{15}$

$$-\frac{2\pi}{15} + \frac{30\pi}{15} = \frac{28\pi}{15}$$

$$-\frac{2\pi}{15} - \frac{30\pi}{15} = \frac{-32\pi}{15}$$

18) a) Coterminal  $\angle$  of  $\frac{7\pi}{8}$

$$\frac{7\pi}{8} + \frac{16\pi}{8} = \frac{23\pi}{8}$$

$$\frac{7\pi}{8} - \frac{16\pi}{8} = \frac{-9\pi}{8}$$

b) Coterminal  $\angle$  of  $\frac{8\pi}{35}$

$$\frac{8\pi}{35} + \frac{70\pi}{35} = \frac{78\pi}{35}$$

$$\frac{8\pi}{35} - \frac{70\pi}{35} = \frac{-62\pi}{35}$$

#20) a) Complement

$$\frac{\pi}{2} - \frac{\pi}{12}$$

$$\frac{6\pi}{12} - \frac{\pi}{12} = \frac{5\pi}{12}$$

Supplement  
 $\pi - \frac{\pi}{12}$

$$\frac{12\pi}{12} - \frac{\pi}{12} = \frac{11\pi}{12}$$

b) Complement

Not possible b/c

$\frac{11\pi}{12}$  is greater than  $\frac{\pi}{2}$

Supplement  
 $\pi - \frac{11\pi}{12}$

$$\frac{12\pi}{12} - \frac{11\pi}{12} = \frac{\pi}{12}$$

#55) a)  $\frac{3\pi}{2}$

$$\frac{3\pi}{2} \left( \frac{180^\circ}{\pi} \right) = 270^\circ$$

b)  $-\frac{7\pi}{6} \left( \frac{180^\circ}{\pi} \right) = -210^\circ$

#19) a) Complement  $\frac{\pi}{2} - \frac{\pi}{3}$

$$= \frac{3\pi}{6} - \frac{2\pi}{6} = \frac{\pi}{6}$$

Supplement  
 $\pi - \frac{\pi}{3}$

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

b) Complement

$\frac{3\pi}{4}$ : Not possible b/c  
 $3\pi/4$  is greater than  $\frac{\pi}{2}$

Supplement

$$\pi - \frac{3\pi}{4} = \frac{\pi}{4}$$

#21) a) Complement

$$\frac{\pi}{2} - 1 \approx 0.57$$

Supplement

$$\pi - 1 \approx 2.14$$

b) Complement

Not possible b/c  $2 > \frac{\pi}{2}$

Supplement

$$\pi - 2 \approx 1.14$$

#47)  $115^\circ$

$$115^\circ \left( \frac{\pi}{180} \right) \approx 2.007 \text{ radians}$$

#51)  $642^\circ$

$$642^\circ \left( \frac{\pi}{180} \right) \approx 11.205 \text{ radians}$$

#57) a)  $\frac{7\pi}{3} \left( \frac{180^\circ}{\pi} \right) = 420^\circ$

b)  $-\frac{13\pi}{60} \left( \frac{180^\circ}{\pi} \right) = -39^\circ$