[2] [a] $\cot\theta = \frac{x}{y} = \boxed{\frac{-\frac{3}{4}}{-\frac{\sqrt{7}}{4}}} = -\frac{3}{\cancel{4}}\cdot -\frac{\cancel{4}}{\sqrt{7}} = \frac{3}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}} = \boxed{\frac{3\sqrt{7}}{7}}$ (1½)

MUST HAVE BOTH PARTS

[b] $\sin\theta = y = \boxed{-\frac{\sqrt{7}}{4}}$ ①

[c] $\sec\theta = \frac{1}{x} = \boxed{\frac{1}{-\frac{3}{4}} = -\frac{4}{3}}$ (1½) MUST HAVE BOTH PARTS

[d] $\boxed{\cos(-\theta) = \cos\theta} = x = \boxed{-\frac{3}{4}}$ (1½) MUST HAVE BOTH PARTS

[e] $\boxed{\sec(-\theta) = \sec\theta} = \boxed{-\frac{4}{3}}$ (1½) MUST HAVE BOTH PARTS

OR

$\sec(-\theta) = \frac{1}{\cos(-\theta)} = \boxed{\frac{1}{-\frac{3}{4}} = -\frac{4}{3}}$ ALSO ACCEPTABLE; MUST HAVE BOTH PARTS

[3] [a] $\theta = \frac{s}{r}$ ① $= \boxed{\frac{\overset{4}{\cancel{8}}\,\cancel{\text{ft}}}{\underset{3}{\cancel{6}}\,\cancel{\text{ft}}}} = \boxed{\frac{4}{3}\text{ RADIANS}}$ ①

[b] $A = \frac{1}{2}r^2\theta = \boxed{\frac{1}{2}(6\text{ ft})^2\,\frac{4}{3}\text{ RADIANS}}$ ①

$= \frac{1}{\cancel{2}}(\overset{6}{\cancel{36}}\text{ ft}^2)\frac{4}{\cancel{3}}$

$= \boxed{24\text{ ft}^2}$ ①

[c] $v = r\omega \longrightarrow \omega = \frac{v}{r} = \boxed{\frac{\overset{15}{\cancel{45}}\ \cancel{\text{ft}}/\text{min}}{\underset{2}{\cancel{6}}\ \cancel{\text{ft}}}}$ ② $= \boxed{\frac{15}{2}\text{ RADIANS}/\text{min}}$ ①

[4] [a] $\boxed{\frac{\pi}{2} - \frac{3\pi}{10}}$ ① $= \left(\frac{1}{2} - \frac{3}{10}\right)\pi = \frac{5-3}{10}\pi = \frac{\cancel{2}}{\underset{5}{\cancel{10}}}\pi = \boxed{\frac{\pi}{5}\text{ RADIANS}}$ ①

[b] $\boxed{180^\circ - 72^\circ = 108^\circ}$ ①

[c] ① $\boxed{\underset{53}{\cancel{159}}^\circ\cdot\frac{\pi\text{ RADIANS}}{\underset{60}{\cancel{180}}^\circ}} = \boxed{\frac{53}{60}\pi\text{ RADIANS}}$ ①

[d] ① $\boxed{\frac{7}{\cancel{30}}\,\cancel{\text{RADIANS}}\cdot\frac{\overset{6}{\cancel{180}}^\circ}{\pi\,\cancel{\text{RADIANS}}}} = \boxed{\frac{42}{\pi}^\circ}$ ①

[5] [a] $-\frac{37}{5}\pi = \boxed{-\overset{\text{ODD}}{7}\frac{2}{5}\pi}$ ①

(1½) $\boxed{-1\frac{2}{5}\pi + 2\pi} = \left(-\frac{7}{5}+2\right)\pi = \frac{-7+10}{5}\pi = \boxed{\frac{3}{5}\pi}$ ① IS COTERMINAL WITH $-\frac{37\pi}{5}$

[b]
$$\boxed{\begin{array}{r} 3 \\ 360\overline{)1320} \end{array}}\ (1\tfrac{1}{2})$$
$$\begin{array}{r} 1080 \\ \hline \end{array}$$

① $\boxed{240°}$ IS COTERMINAL WITH 1320°

[c] $\sin 1320° = \boxed{\sin 240° = -\frac{\sqrt{3}}{2}}$ ① MUST HAVE BOTH PARTS

[6] $v = r\omega \longrightarrow r = \frac{v}{\omega} = \boxed{\frac{15\text{ ft/sec}}{\frac{3}{5}\text{ RADIANS/sec}}}$ ② $= \frac{\overset{5}{\cancel{15}}\text{ft}}{\cancel{\text{SEC}}}\cdot\frac{5\ \cancel{\text{SEC}}}{\cancel{3}\ \text{RADIANS}}$

$= \boxed{25\text{ ft}}$ ①

[7] [a] $\frac{y}{x} = \boxed{\frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}}}$ ① $= -\frac{1}{\cancel{2}}\cdot\frac{\cancel{2}}{\sqrt{3}} = -\frac{1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \boxed{-\frac{\sqrt{3}}{3}}$ ①

[b] $\frac{1}{y} = \boxed{\frac{1}{-\frac{\sqrt{2}}{2}}}$ ① $= -\frac{2}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = -\frac{2\sqrt{2}}{2} = \boxed{-\sqrt{2}}$ ①

[c] $\frac{1}{x} \longrightarrow \boxed{\frac{1}{0}\text{ UNDEFINED}}$ ①

[d] $\frac{x}{y} = \boxed{\frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}}}$ ① $= -\frac{1}{2}\cdot -\frac{2}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$ ①

[8] $\cot\theta = \frac{x}{y}$

$\boxed{\text{IN } Q_2,\ x<0 \text{ AND } y>0, \text{ SO } \frac{x}{y}<0}$ ①

$\boxed{\text{IN } Q_4,\ x>0 \text{ AND } y<0, \text{ SO } \frac{x}{y}<0}$ ①