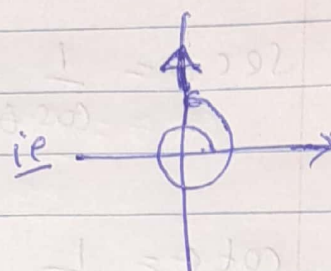
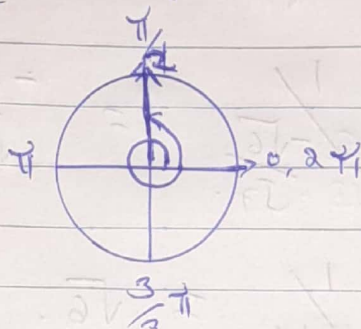
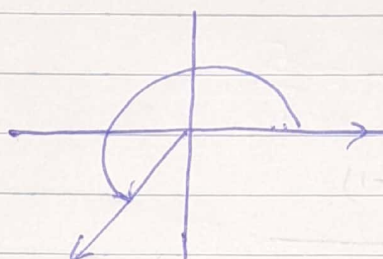


* (4) sketch in standard position.

a) $\frac{5}{2} \pi = 2\frac{1}{2} \pi$ (anticlockwise)

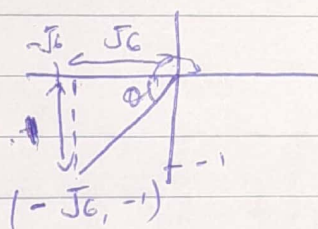


b) $\frac{4}{\pi} \approx 1.27 \pi$



(d)

(2) Find the exact values.



$$a^2 + b^2 = c^2$$

$$(\sqrt{6})^2 + (1)^2 = c^2$$

$$x = -\sqrt{6}$$

$$y = -1$$

$$r = \sqrt{7}$$

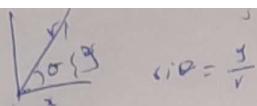
$$\sqrt{6} + 1 = 7$$

$$r = \sqrt{7}$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{-1}{\sqrt{7}} = -\frac{\sqrt{7}}{7}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{-\sqrt{6}}{\sqrt{7}} = -\frac{\sqrt{42}}{7}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{-1}{-\sqrt{6}} = \frac{1}{\sqrt{6}} = \frac{\sqrt{6}}{6}$$



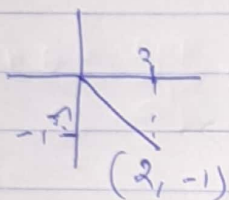
$$\sin \theta = \frac{y}{r}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{1}{(-\frac{1}{\sqrt{7}})} = -\sqrt{7}.$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{1}{\frac{-\sqrt{6}}{\sqrt{7}}} = \frac{-\sqrt{7}}{\sqrt{6}} = -\frac{\sqrt{42}}{6}.$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{1}{\frac{1}{\sqrt{6}}} = \sqrt{6}.$$

(b)



$$r = \sqrt{2^2 + 1^2} = \sqrt{4+1} = \sqrt{5}.$$

$$x = 2 \quad r = \sqrt{5}.$$

$$y = -1$$

$$\sin \theta = \frac{y}{r} = \frac{-1}{\sqrt{5}} = -\frac{\sqrt{5}}{5}.$$

$$\cos \theta = \frac{x}{r} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}.$$

$$\tan \theta = \frac{y}{x} = \frac{-1}{2} = -\frac{1}{2}.$$

$$\csc \theta = \frac{1}{\sin \theta} = -\sqrt{5}.$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{\sqrt{5}}{2}.$$

$$\cot \theta = \frac{1}{\tan \theta} = -2.$$

(6) Complement and Supplement - to 2 dp.

(a) 3. $\frac{3}{\pi} \approx 0.95 \pi$.

Complement: $\Rightarrow 0.5\pi - 0.95\pi \approx -0.45\pi$ radians

Supplement: $\Rightarrow \pi - 0.95\pi = 0.05\pi$ radians

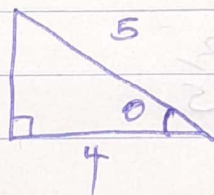
(b) 0.5.

$\frac{0.5}{\pi} \approx 0.16 \pi$.

Complement: $0.5\pi - 0.16\pi = 0.34\pi$ radians

Supplement: $\pi - 0.16\pi = 0.84\pi$ radians

7(a) $\sin \theta = \frac{3}{5} = \frac{\text{opp}}{\text{hyp}}$



~~$\sin \theta$~~

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{4}{5}$$

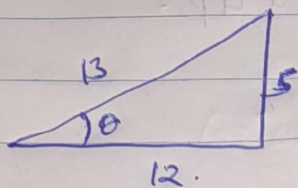
$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{3}{4}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{5}{3}$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{5}{4}$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{4}{3}$$

(b)



$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{5}{13}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{12}{13}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{5}{12}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{13}{5}$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{13}{12}$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{12}{5}$$

