

$$\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}\right) = \left(\frac{\sqrt{2}}{2}\right)^2 - \left(\frac{\sqrt{3}}{2}\right)^2 = \frac{2}{4} - \frac{3}{4} = -\frac{1}{4}$$

(الف)

$$\frac{1 + 2 \times \frac{1}{2}}{2 \times \frac{2}{2} + 2 \times \frac{1}{2}} = \frac{1}{2}$$

(2)

(ب)

$$AH = \sin 45^\circ \times \sqrt{6} = \frac{\sqrt{2}}{2} \times \sqrt{6} = \frac{\sqrt{12}}{2} = \sqrt{3}$$

$$(2\sqrt{3})^2 = \sqrt{3}^2 + HC^2 = 12 \quad HC^2 = 12 - 3 = 9 \quad HC = 3$$

(الف)

$$\frac{\sqrt{3}}{2} \times AC = 9$$

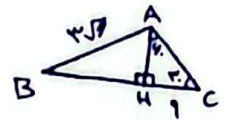
$$\Rightarrow AC = 6\sqrt{3}$$

$$AH = \frac{1}{2} \times 6\sqrt{3} = 3\sqrt{3}$$

$$3\sqrt{3} \times \sin B = 3\sqrt{3}$$

$$\sin B = \frac{\sqrt{3}}{\sqrt{3}} \Rightarrow B = 45^\circ$$

(2)



(ب)

$$\frac{\sqrt{3}}{2} \times AD = 5\sqrt{3} \quad AD = 10 \quad \frac{1}{2} \times AC = 5\sqrt{3} \quad AC = 10\sqrt{3} \quad BD = \frac{1}{2} \times 10 = 5 \quad BC = \frac{\sqrt{3}}{2} \times 10\sqrt{3} = 15$$

$$x = BC - BD = 15 - 5 = 10$$

(الف)

$$AC \times \frac{1}{2} = 2 \Rightarrow AC = 4 \Rightarrow BC = \frac{\sqrt{3}}{2} \times 4 = 2\sqrt{3} \quad CD^2 = 1 + 1 = 2 \Rightarrow CD = \sqrt{2} \Rightarrow \sin \gamma = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

(ب)

(2)

$$AC = x \Rightarrow CH = \frac{\sqrt{2}}{2} x \Rightarrow \frac{BH}{2} = \frac{\sqrt{2}}{2} x \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2} x \Rightarrow BH = \frac{\sqrt{2}}{2} x \Rightarrow AB = \frac{\sqrt{2}}{2} x + \frac{\sqrt{2}}{2} x = \frac{\sqrt{2}}{2} x$$

$$\frac{AC}{AB} = \frac{2}{\sqrt{2} + \sqrt{2}}$$

$$\frac{AB}{AC} = ?$$

(2)

$$S(\triangle EAB) = \frac{2 \sin B \times 2}{2} \Rightarrow S(\triangle ECD) = \frac{2 \sin B \times 2}{2}$$

$$\frac{S(\triangle EAB)}{S(\triangle ECD)} = \frac{2 \sin B}{2 \sin B} = \frac{2}{2} = 1$$

(2)

$$\frac{\sqrt{r}}{r} \times r \times r = 4\sqrt{r} \quad \checkmark$$

$$\frac{1}{r} \times r \times r \times \frac{\sqrt{r}}{r} = 4\sqrt{r} \quad \checkmark$$

(y)

(w)

(v)

$$r^2 + \epsilon^2 = r_0 \Rightarrow \sqrt{r_0} = p q \Rightarrow \cos \theta = \frac{\epsilon}{\sqrt{r_0}} = \frac{r \sqrt{\Delta}}{\Delta} \quad \checkmark$$

(y)

$$1\Delta_0 - 1\Delta_0 = V\Delta$$

$$A\Delta = r_0 \Delta$$

$$V\Delta - \epsilon\Delta = r_0$$

$$\frac{\sqrt{r}}{r} \times B\Delta = \frac{\Delta}{r}$$

$$B\Delta = \Delta \sqrt{r}$$

$$B\Delta = \frac{\Delta \sqrt{r}}{r} \Rightarrow b = \frac{\Delta \sqrt{r}}{r}$$

$$m = \frac{\sqrt{r}}{r} = \sqrt{r}$$

$$r_y = r_x + a \rightarrow m = 1 \rightarrow \tan \theta = 1 \rightarrow \theta = 45^\circ \rightarrow y = mx + b \rightarrow m = \tan \theta = -\sqrt{r}$$

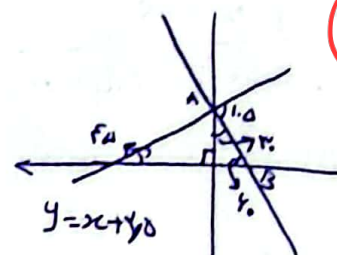
$$mb = \sqrt{r} \times \frac{\Delta \sqrt{r}}{r} = \frac{\Delta}{r} \quad (\text{as } \frac{\Delta}{r})$$

$$\frac{\Delta}{r} = -\sqrt{r}(\cdot) + b \rightarrow b = \frac{\Delta}{r} \quad mb = \frac{\Delta}{r} \times (-\sqrt{r}) = -\frac{\Delta \sqrt{r}}{r}$$

$$f\left(\frac{\Delta \pi}{r}\right) = \cos\left(\pi + \frac{\Delta \pi}{r}\right) + \sin\left(\frac{\pi}{r} - \frac{\Delta \pi}{r}\right) - \tan\left(\frac{r\pi}{r} + \frac{\Delta \pi}{r}\right) = \cos \frac{\Delta \pi}{r} + \cos \frac{\Delta \pi}{r} - (-\cot \frac{\Delta \pi}{r}) = \cot \frac{\Delta \pi}{r}$$

$$\Rightarrow \cot \frac{\Delta \pi}{r} = \frac{\cos \frac{\Delta \pi}{r}}{\sin \frac{\Delta \pi}{r}} = \frac{-\frac{\sqrt{r}}{r}}{\frac{1}{r}} = -\sqrt{r} \quad \checkmark$$

(y)



(1)

Case

$$\frac{-\cos x - \sin x}{-\cos x + \sin x} = \frac{(\cos x + \sin x)}{(\cos x - \sin x)}$$

$$\sin\left(\frac{11\pi}{r} + a\right) = \cos a, \quad \cos\left(\frac{r}{r} + a\right) = -\cos a$$

$$\cos\left(\frac{12\pi}{r} - a\right) = -\sin a, \quad \sin\left(\frac{r}{r} - a\right) = -\sin a$$

(1)