

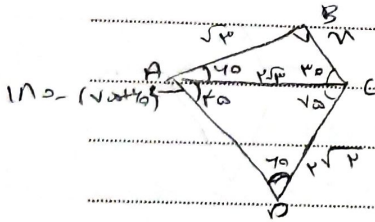
$$A = 180 - 120 = 60^\circ$$

$$\frac{BC}{\sin A} = \frac{AC}{\sin B} = \frac{AB}{\sin C} \rightarrow \frac{10}{\frac{\sqrt{3}}{2}} = \frac{10\sqrt{4}}{\sin B}$$

$$\sin B = \frac{10\sqrt{4} \times \frac{\sqrt{3}}{2}}{10} = \frac{10\sqrt{12}}{20} = \frac{10\sqrt{3}}{10} = \sqrt{3} = \frac{\sqrt{3}}{2} \rightarrow B = 60^\circ$$

$$B = 60^\circ \quad C = 180 - (40 + 40) = 100^\circ$$

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$$\frac{\sin 40}{10\sqrt{4}} = \frac{\sin 40}{AC} \rightarrow \frac{\sqrt{4}}{10\sqrt{4}} = \frac{\sqrt{4}}{AC}$$

$$\frac{\sqrt{4}}{10\sqrt{4}} = \frac{\sqrt{4}}{AC} \rightarrow \frac{1}{10} = \frac{\sqrt{4}}{AC} \rightarrow \frac{1}{10} = \frac{\sqrt{4}}{10\sqrt{4}} \rightarrow AC = \frac{10\sqrt{4}}{1} = 10\sqrt{4}$$

$$\frac{\sin 40}{AC} = \frac{\sin 40}{AB} \rightarrow \frac{1}{10\sqrt{4}} = \frac{1}{AB} \rightarrow \frac{1}{10\sqrt{4}} = \frac{1}{AB} \rightarrow AB = 10\sqrt{4}$$

$$r = \sqrt{(10\sqrt{4})^2 - (10)^2} = \sqrt{160 - 100} = \sqrt{60} = 2\sqrt{15}$$

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$$\frac{(b-r)\sin C}{\sin B} = C \rightarrow \frac{b-r}{\sin B} = \frac{C}{\sin C} \rightarrow b-r = b \rightarrow b-b-r=0$$

$$(b+1)(b-r) = 0 \rightarrow b = r$$

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$$10 = \sqrt{(10)^2 + (10)^2 - 10 \times 10 \times \cos B} \rightarrow \cos B = \frac{1}{10} = \frac{1}{10}$$

$$\sin B = \sqrt{1 - \left(\frac{1}{10}\right)^2} = \frac{\sqrt{99}}{10}$$

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$$a = \sqrt{14 + (10(1+\sqrt{4}))^2 - 10 \times 10 \times (1+\sqrt{4}) \times \frac{1}{10}} = \sqrt{14 + 10(1+\sqrt{4}) - 10(1+\sqrt{4})} = 10\sqrt{4}$$

$$= 10\sqrt{4} = 20$$

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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \rightarrow \frac{10\sqrt{4}}{\frac{\sqrt{3}}{2}} = \frac{10}{\sin B} = \frac{10(1+\sqrt{4})}{\sin C} \rightarrow \sin B = \frac{10\sqrt{4}}{10\sqrt{3}} = \frac{\sqrt{4}}{\sqrt{3}} = \frac{2}{\sqrt{3}}$$

$$C = 180 - (40 + 40) = 100^\circ$$

$$\frac{1}{\sqrt{3}} = \frac{\sqrt{4}}{2} \rightarrow B = 60^\circ$$

Subject:

Year: Month: Day:

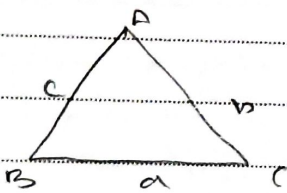
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$$r = \sqrt{r^2 + 1 - r \cos \alpha} \Rightarrow \cos \alpha = \frac{1}{r} \quad \checkmark$$

$$DE = \sqrt{14 + 34 - r \times \frac{1}{r}} = \sqrt{r_0} = \boxed{r\sqrt{10}} \quad \checkmark$$

$$5 \quad BCF = \sqrt{r^2 + 4r - 10 \times \frac{1}{r}} = \sqrt{r_0} = \boxed{r\sqrt{10}} \quad \checkmark$$

$$S = \frac{1}{2} \times r \times r \times \frac{\sqrt{10}}{r} = \boxed{10\sqrt{10}} \quad \checkmark$$



$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$(b+c)^2 - a^2 = b^2 + c^2 + 2bc - b^2 - c^2 + 2bc \cos A$$

$$\Rightarrow 2bc(1 + \cos A) \Rightarrow \frac{2bc(1 + \cos A)}{2c(1 + \cos A)} = \boxed{r} \quad \checkmark$$

$$\frac{a^2 + b^2 - c^2}{a+b-c} = a \Rightarrow \frac{a^2 + b^2 - c^2}{a+b-c} = a \Rightarrow a(b-c)$$

$$\Rightarrow (b-c)(b^2 + c^2 + bc) = a^2(b-c) \Rightarrow b^2 + c^2 + bc = b^2 + c^2 - 2bc \cos A$$

$$\Rightarrow 2bc \cos A = -bc \Rightarrow \cos A = \boxed{-\frac{1}{2}} \quad \checkmark \rightarrow A = 120^\circ$$

$$20 \quad r = \frac{1}{r} \times \frac{1}{r} \times (1 + r \cos \theta) \times (r - r \cos \theta) \Rightarrow r - r \cos \theta + r \cos \theta - r \cos^2 \theta = 1 \quad 10$$

$$\Rightarrow r \cos^2 \theta - r \cos \theta + 1 = 0 \Rightarrow r \cos \theta = 1 \quad \frac{1}{r} \Rightarrow \cos \theta = \frac{1}{r}$$

$$a^2 = b^2 + c^2 - 2bc \cos \theta \Rightarrow r^2 + 14 - 2\sqrt{14} = r_0 - 2\sqrt{14} \quad \checkmark$$