



SSC

SELECTION POST | CGL

TRIGONOMETRY

MATHEMATICS

2024-25 का निचोड़

Daily Live
3:00 pm

By - Shashi Sir



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$$\sin A = \frac{p}{h} = \frac{3}{5}$$

$$b = \sqrt{n^2 - m^2}$$

$$\cos A = \frac{b}{h} = \frac{\sqrt{n^2 - m^2}}{n}$$

1. If $\sin A = \frac{m}{n}$ and $A \in (0, \frac{\pi}{2})$ then what is $\cos A$ in terms of m and n

यदि $\sin A = \frac{m}{n}$ और $A \in (0, \frac{\pi}{2})$ है, तो $\cos A$ का मान m और n के पदों में क्या है?

[SSC CGL 22 Sep 2025 Shift-1]

(a) $\frac{\sqrt{n^2 - m^2}}{n}$

(b) $\frac{m}{\sqrt{n^2 - m^2}}$

(c) $\frac{n}{\sqrt{n^2 - m^2}}$

(d) $\frac{\sqrt{m^2 - n^2}}{n}$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

$$S^3 + C^3 = (S+C)(S^2 + C^2 - S \times C)$$

$$(S+C)^2 = (\sqrt{2})^2$$

$$S^2 + C^2 + 2S \times C = 2$$

$$1 + 2S \times C = 2$$

$$2 \times S \times C = 1$$

$$S \times C = \frac{1}{2}$$

If $\sin A + \cos A = \sqrt{2}$ then find $\sin^3 A + \cos^3 A$

यदि $\sin A + \cos A = \sqrt{2}$ तो $\sin^3 A + \cos^3 A$ ज्ञात कीजिए।

[SSC CGL 22 Sep 2025 Shift-II]

(a) $\frac{\sqrt{2}}{2}$

(b) $\frac{\sqrt{2}}{5}$

(c) $\frac{\sqrt{3}}{2}$

(d) $\frac{\sqrt{5}}{2}$

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

$$= \frac{\sqrt{2}}{2}$$

$$\sin A = \frac{x}{1} = \frac{p}{h}$$

$$b = \sqrt{1 - x^2}$$

$$\tan A = \frac{x}{\sqrt{1 - x^2}}$$

3. If $\sin A = x$, then what is the value of $\tan A$ in terms of x ?
यदि $\sin A = x$, तो $\tan A$ का मान x के संदर्भ में क्या है?

[SSC CGL 23 Sep 2025 Shift-III]

- (a) $\frac{x}{\sqrt{1 - x^2}}$
- (b) $\frac{\sqrt{1 - x^2}}{x}$
- (c) $\frac{1}{x}$
- (d) x^2

$$S + C = \frac{\sqrt{3}}{2}$$

$$S^2 + C^2 + 2S \times C = (S + C)^2$$

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

4. If $\sin A + \cos A = \frac{\sqrt{3}}{2}$, Find $\sin^2 A + \cos^2 A + 2 \sin A \cos A$.

यदि $\sin A + \cos A = \frac{\sqrt{3}}{2}$, तो ज्ञात कीजिए $\sin^2 A + \cos^2 A + 2 \sin A \cos A$

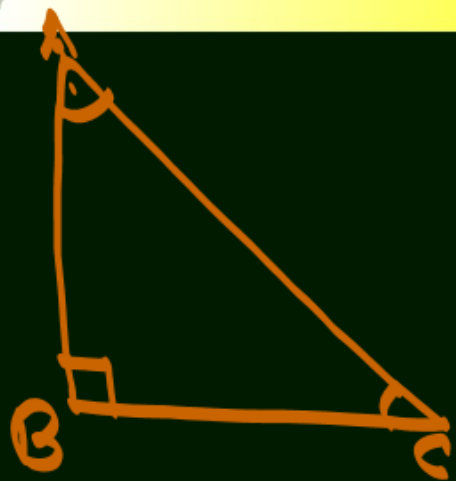
SSC CGL 25 Sep 2025]

(a) 1

(b) $\sqrt{3}$

☒ (c) $\frac{3}{4}$

(d) $\frac{1}{2}$



$$\sin A = \cos(90^\circ - A)$$

5. Which of the following is true for all acute angles A?
निम्नलिखित में से कौन सा कथन सभी न्यून कोण A के लिए सत्य है?

SSC CGL 23 Sep 2025 Shift-1

- (a) $\sin A = \sin(90^\circ - A)$
- ☒ (b) $\sin A = \cos(90^\circ - A)$
- (c) $\cos A = \tan(90^\circ - A)$
- (d) $\cot A = \sin(90^\circ - A)$

$$\sin x = \cos(2x - 10)$$

$$x + (2x - 10^\circ) = 90^\circ$$

$$3x = 100^\circ$$

$$x = \frac{100}{3} = 33.33^\circ$$

6. If $\sin x = \cos(2x - 10^\circ)$ find the value of x .

यदि $\sin x = \cos(2x - 10^\circ)$ हो, तो x का मान ज्ञात कीजिए।

[SSC CGL 23 Sep 2025 Shift-III]

(a) 25.52°

✓ (b) 33.33°

(c) 40°

(d) 50°

$$2x + 15^\circ + x - 5^\circ = 90^\circ$$

$$3x + 10 = 90$$

$$3x = 80$$

$$x = 26.67^\circ$$

7. If $\sin(2x + 15^\circ) = \cos(x - 5^\circ)$ what is the value of x ?

यदि $\sin(2x + 15^\circ) = \cos(x - 5^\circ)$ तो x का मान क्या है?

SSC CGL 2025

(a) 45.57°

(b) 60°

(c) 30°

☒ (d) 26.67°

$$\tan \rightleftharpoons \cot$$

$$\sin \rightleftharpoons \cos$$

$$\sec \rightleftharpoons \csc$$

$$\tan(90^\circ - A) = \cot A$$

$$\cot A = \frac{1}{\tan A} = \cot 30^\circ$$

$$A = 30^\circ$$

$$\sin A = \sin 30^\circ = \frac{1}{2}$$

8. If $\tan(90^\circ - A) = \sqrt{3}$, what is $\sin A$?

यदि $\tan(90^\circ - A) = \sqrt{3}$ तो $\sin A$ क्या है?

[SSC CGL 12 Sep 2025 Shift-II]

- (a) $\frac{1}{2}$
- (b) $\frac{\sqrt{3}}{2}$
- (c) $\frac{\sqrt{2}}{2}$
- (d) $\frac{3}{4}$

9. What is the radian measure of 150° ?
 150° का रेडियन माप क्या है?

[SSC CGL 13 Sep 2025 Shift-I]

$$1^\circ = \frac{180^\circ}{\pi}$$

$$1^\circ = \frac{\pi}{180}$$

$$150^\circ = 150 \times \frac{\pi}{180} = \frac{5\pi}{6}$$

- (a) $\frac{5\pi}{6}$
- (b) $\frac{2\pi}{3}$
- (c) $\frac{3\pi}{4}$
- (d) $\frac{\pi}{3}$

Radian $\longrightarrow$ degree

$$\frac{5\pi}{4} \times \frac{180^\circ}{\pi} = 225^\circ$$

10. What is $\frac{5\pi}{4}$ radians in degrees?

$\frac{5\pi}{4}$ रेडियन कितने डिग्री में है?

[SSC CGL 12 Sep 2025 Shift-II]

- ☒ (a) 225°
- (b) 180°
- (c) 240°
- (d) 360°

$$\sin(A+B) = \sin A \times \cos B + \sin B \times \cos A$$

$$\begin{aligned}\sin(2A) &= \sin A \times \cos A + \sin A \times \cos A \\ &= 2 \sin A \times \cos A\end{aligned}$$

$$(S+C)^2 = \left(\frac{5}{4}\right)^2$$

$$S^2 + C^2 + 2S \times C = \frac{25}{16}$$

$$1 + 2S \times C = \frac{25}{16}$$

$$2S \times C = \frac{25}{16} - 1 = \frac{9}{16}$$

11. If $\sin A + \cos A = \frac{5}{4}$ find $\sin 2A$.

अगर $\sin A + \cos A = \frac{5}{4}$ खोजो $\sin 2A$.

[SSC CGL 17 Sep 2025 Shift-I]

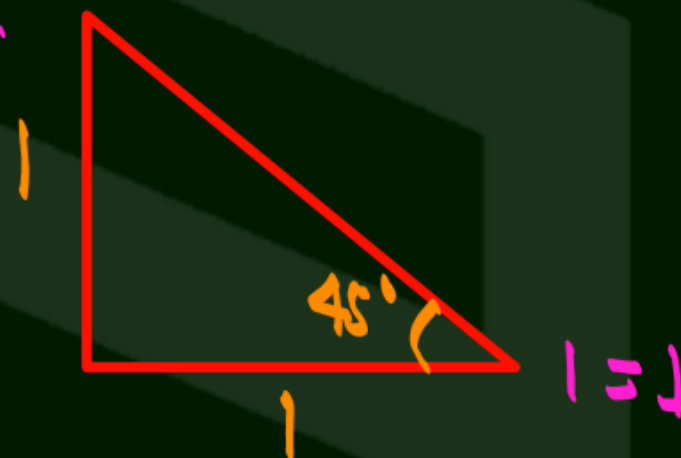
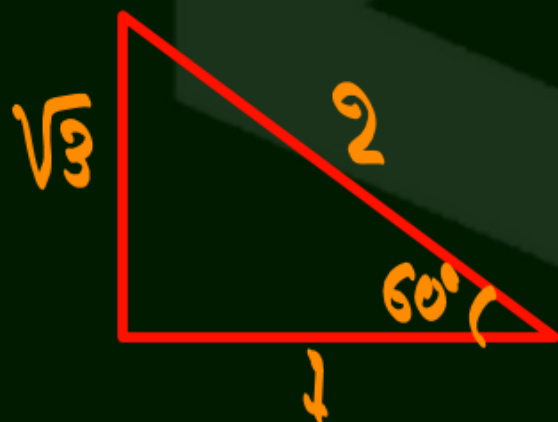
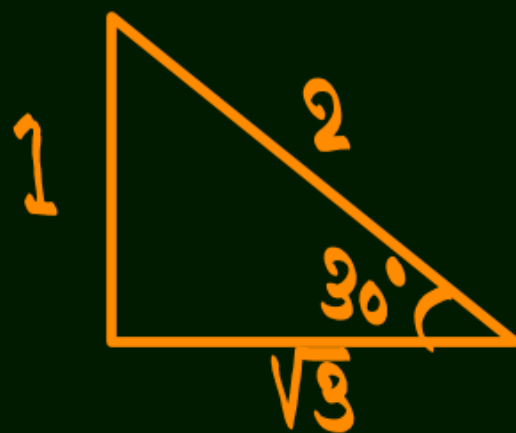
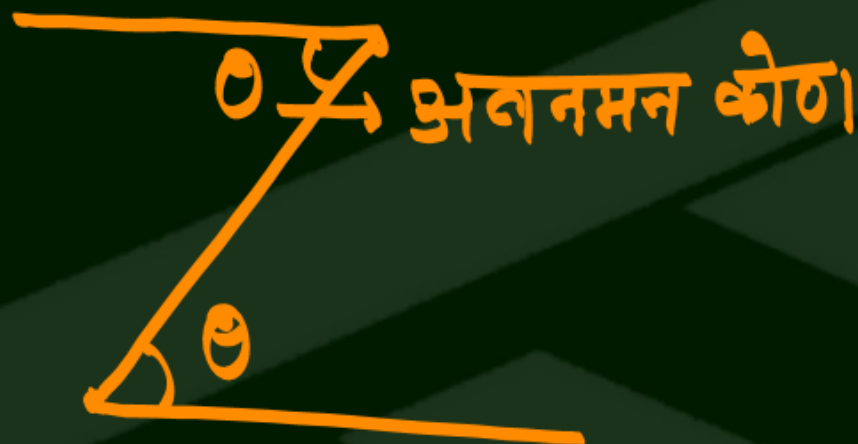
- (a) $\frac{1}{4}$
- (b) $\frac{5}{18}$
- (c) $\frac{7}{8}$
- (d) $\frac{9}{16}$



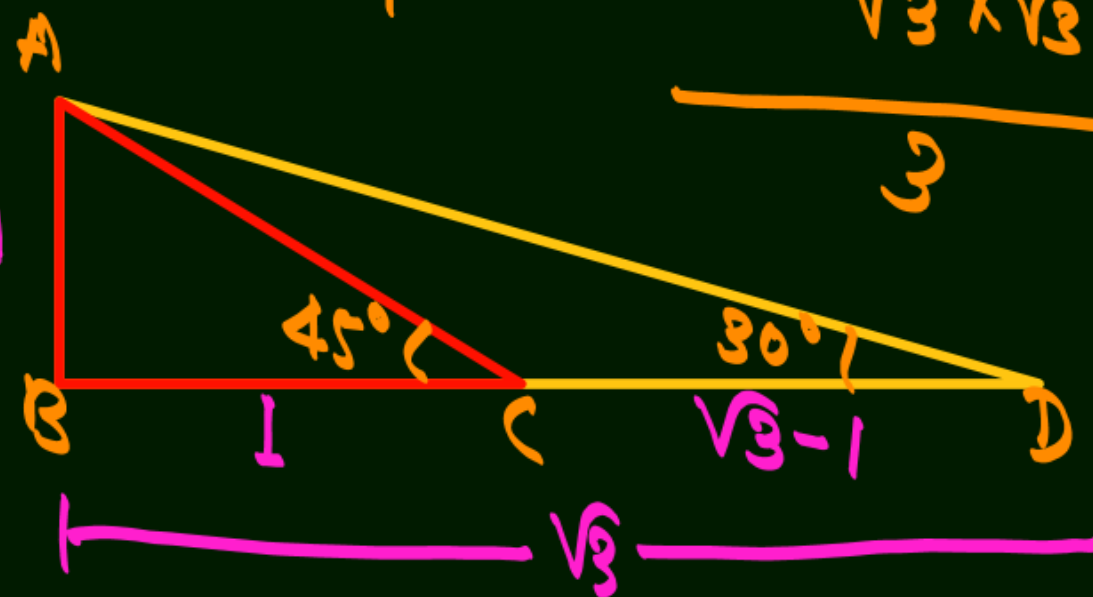
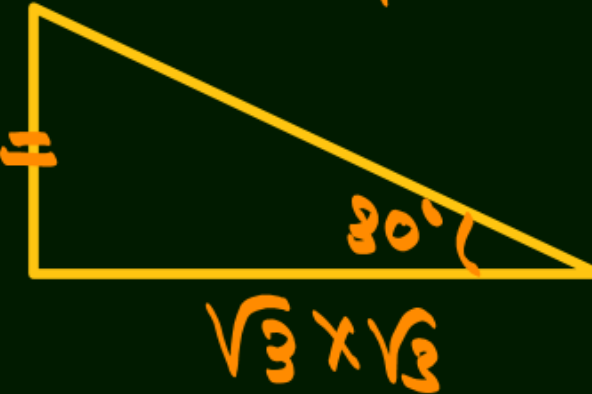
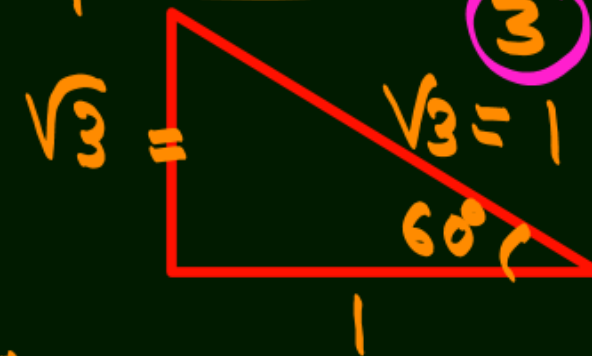
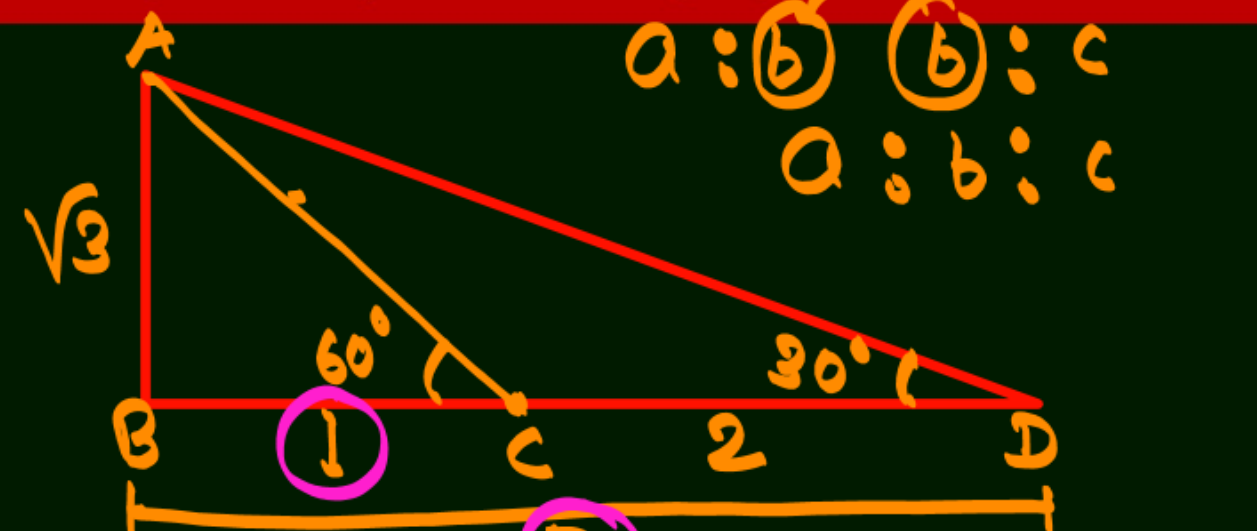
Height * and * Distance

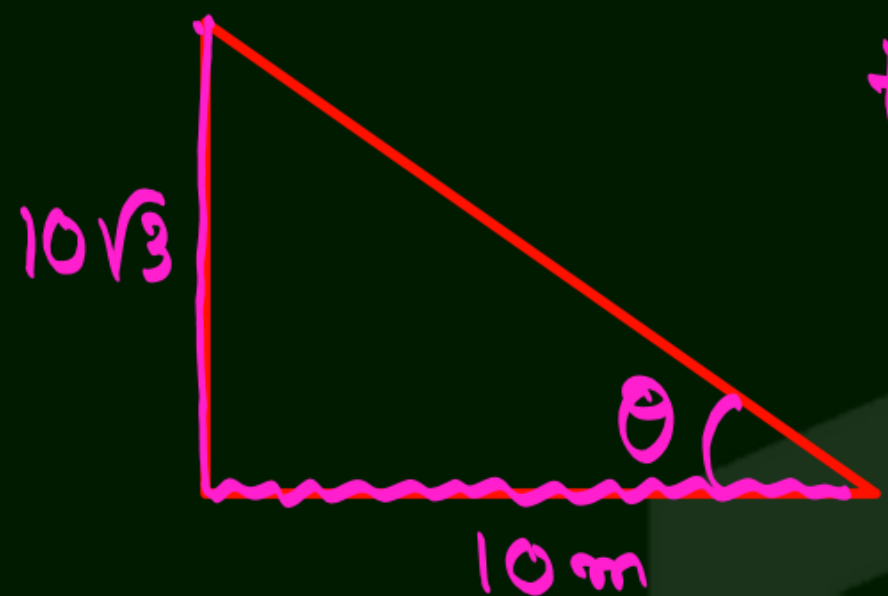
$$a : b : c$$

$$a : b : c$$



$$BC : CD$$





$$\tan \theta = \frac{10\sqrt{3}}{10}$$

$$\tan \theta = \sqrt{3} = \tan 60^\circ$$

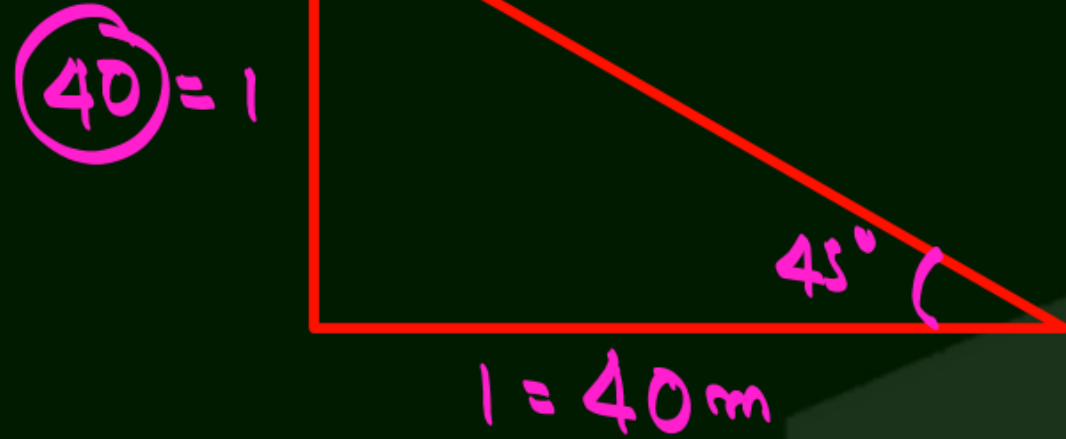
$$\theta = 60^\circ$$

12. A flagpole has a shadow measuring 10 meters. Given that the height of the flagpole is $10\sqrt{3}$ meters, what is the angle at which the sun is elevated?

एक ध्वजस्तंभ की छाया 10 मीटर है। दिया गया है कि ध्वजस्तंभ की ऊंचाई $10\sqrt{3}$ मीटर है, तो सूर्य किस कोण पर ऊंचा है?

[SSC CGL 17 Sep 2025 Shift-I]

- (a) 30°
- (b) 45°
- ☒ (c) 60°
- (d) 75°



13. A tower generates a shadow that is 40 meters long when the sun's angle of elevation is 45 degrees. What is the height of the tower?

एक मीनार की परछाई 40 मीटर लंबी होती है जब सूर्य का उन्नयन कोण 45 डिग्री होता है। मीनार की ऊँचाई कितनी है?

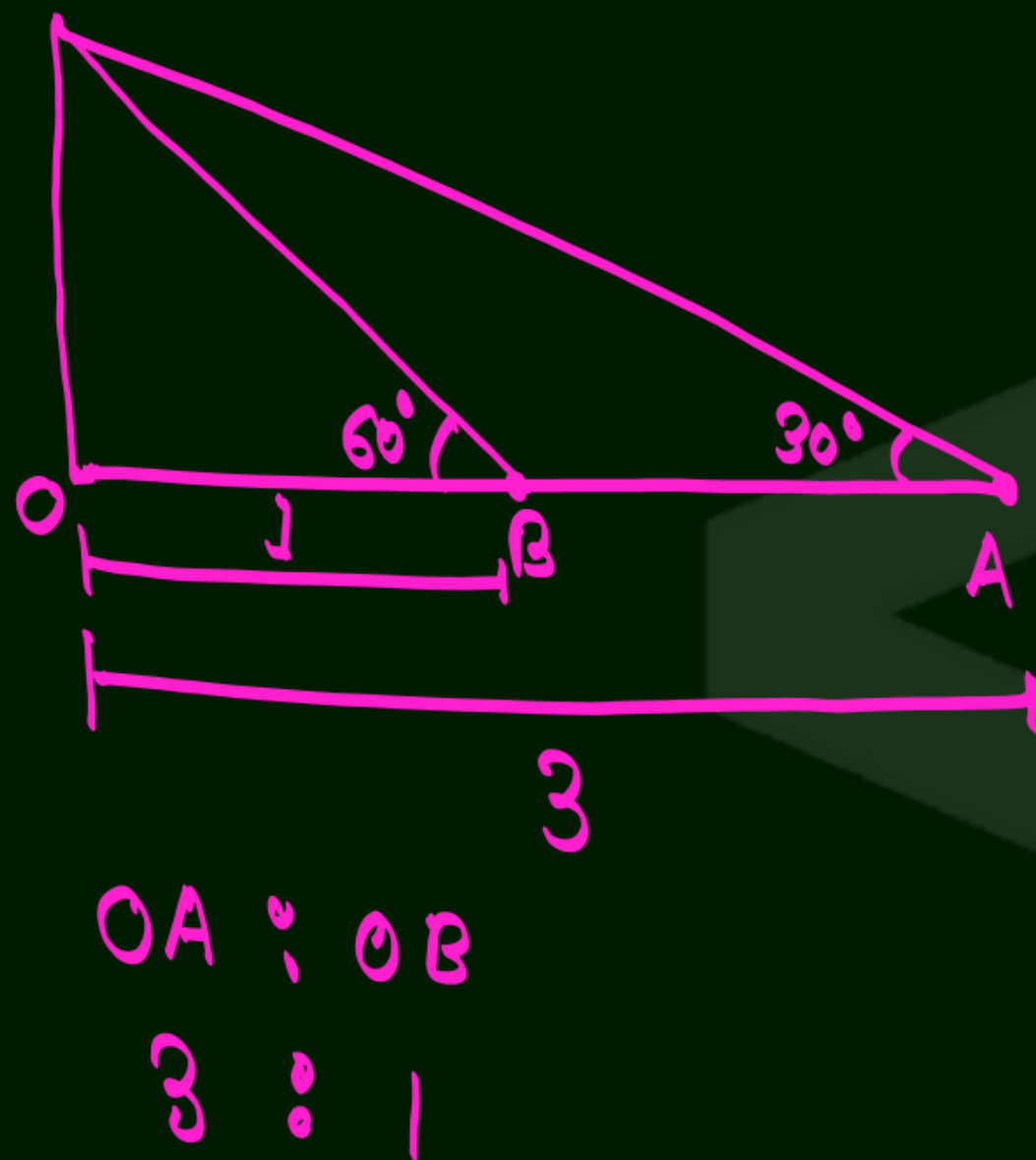
[SSC CGL 18 Sep 2025 Shift-II]

(a) 50 m

☒ (b) 40 m

(c) 20 m

(d) 10 m



14. From a point A on the ground, the angle of elevation to the top of a building is 30° . From a point B, which is directly between A and the foot of the building, the angle of elevation is 60° . What is the ratio of the distance of point A from the building's foot to the distance of point B from the building's foot?

जमीन पर एक बिंदु A से, एक इमारत के शीर्ष का उन्नयन कोण 30° है। एक बिंदु B से, जो A और इमारत के तल के बीच में है, उन्नयन कोण 60° है। इमारत के तल से बिंदु A की दूरी और इमारत के तल से बिंदु B की दूरी का अनुपात क्या है?

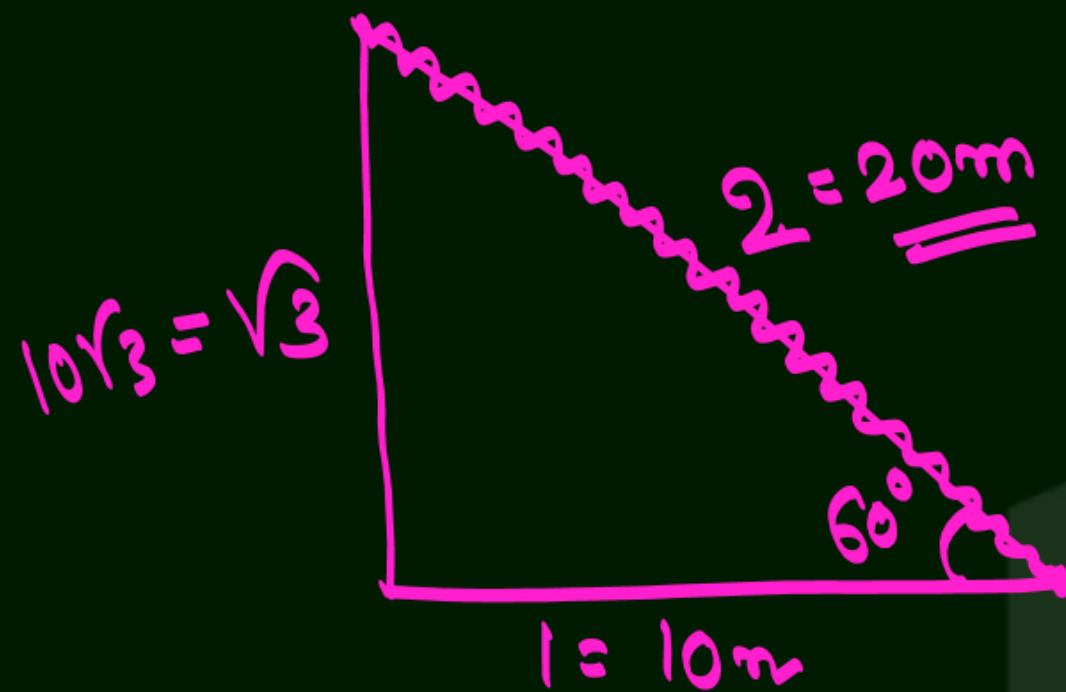
[SSC CGL 19 Sep 2025 Shift-II]

(a) 1:3

(b) $\sqrt{3} : 1$

(c) 2:1

~~(d) 3:1~~

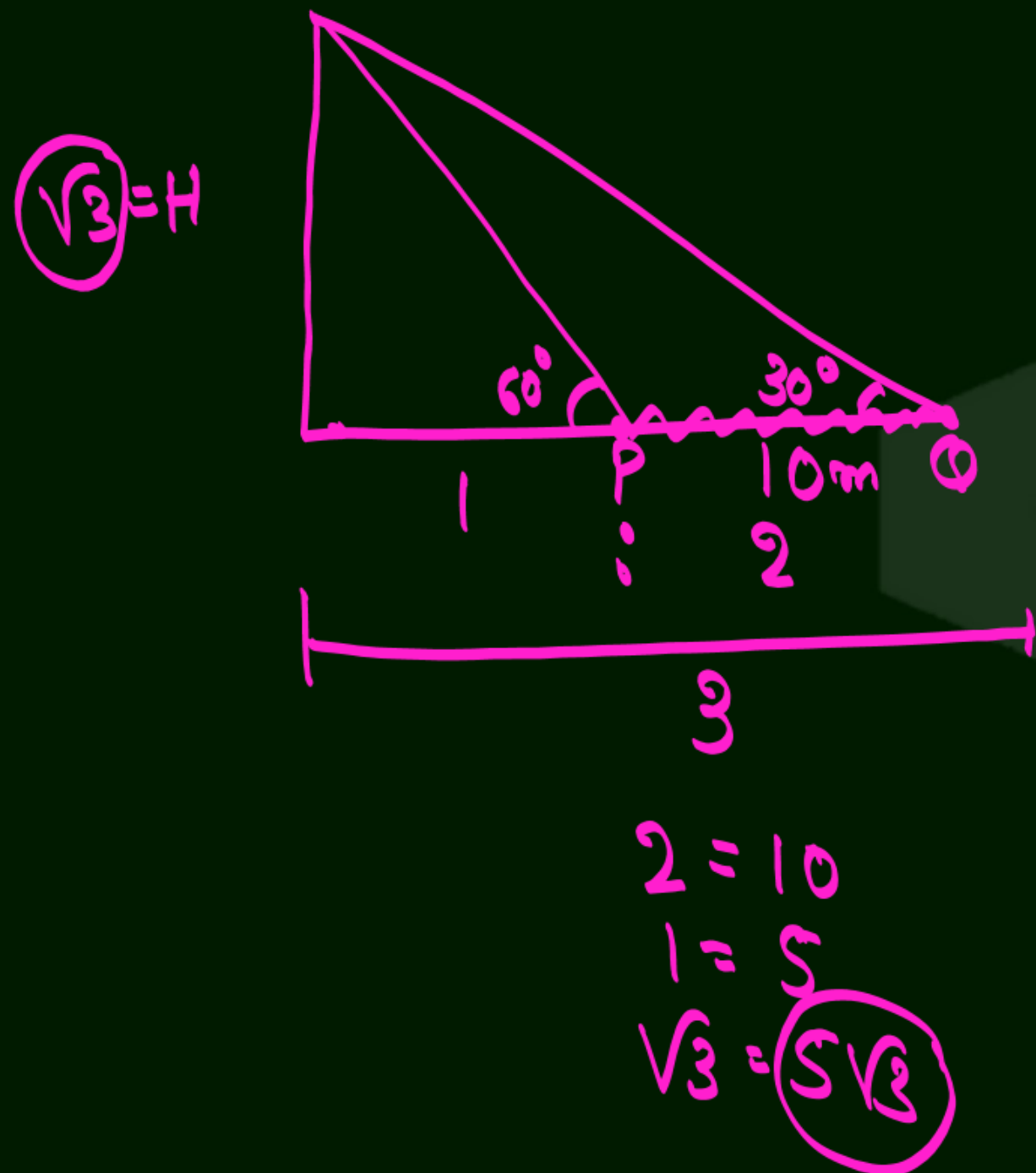


15. A taut wire supports a vertical pole. The wire is fixed to the ground 10 meters away from the base of the pole and makes an angle of 60° with the ground. What is the length of the wire?

एक तना हुआ तार एक ऊर्ध्वाधर खंभे को सहारा देता है। तार खंभे के आधार से 10 मीटर दूर जमीन पर टिका हुआ है और जमीन के साथ 60° का कोण बनाता है। तार की लंबाई क्या है?

[SSC CGL 17 Sep 2025 Shift-III]

- (a) 10 m
- (b) $10\sqrt{3}$ m
- ✓ (c) 20 m
- (d) $20\sqrt{3}$ m



16. A vertical pole of height H stands on the ground. From a point P on the ground, the angle of elevation of the top of the pole is 60° . From a different point Q , located 10 meters away from point P (directly along the line extending from the base of the pole), the angle of elevation to the top of the pole is 30° . What is the height of the pole?

जमीन पर H ऊंचाई का एक ऊर्ध्वाधर खंभा खड़ा है। जमीन पर एक बिंदु P से, खंभे के शीर्ष का उन्नयन कोण 60° है। बिंदु P से 10 मीटर दूर स्थित एक अलग बिंदु Q से (खंभे के आधार से फैली रेखा के साथ सीधे) खंभे के शीर्ष का उन्नयन कोण 30° है। खंभे की ऊंचाई क्या है?

[SSC CGL 15 Sep 2025 Shift-II]

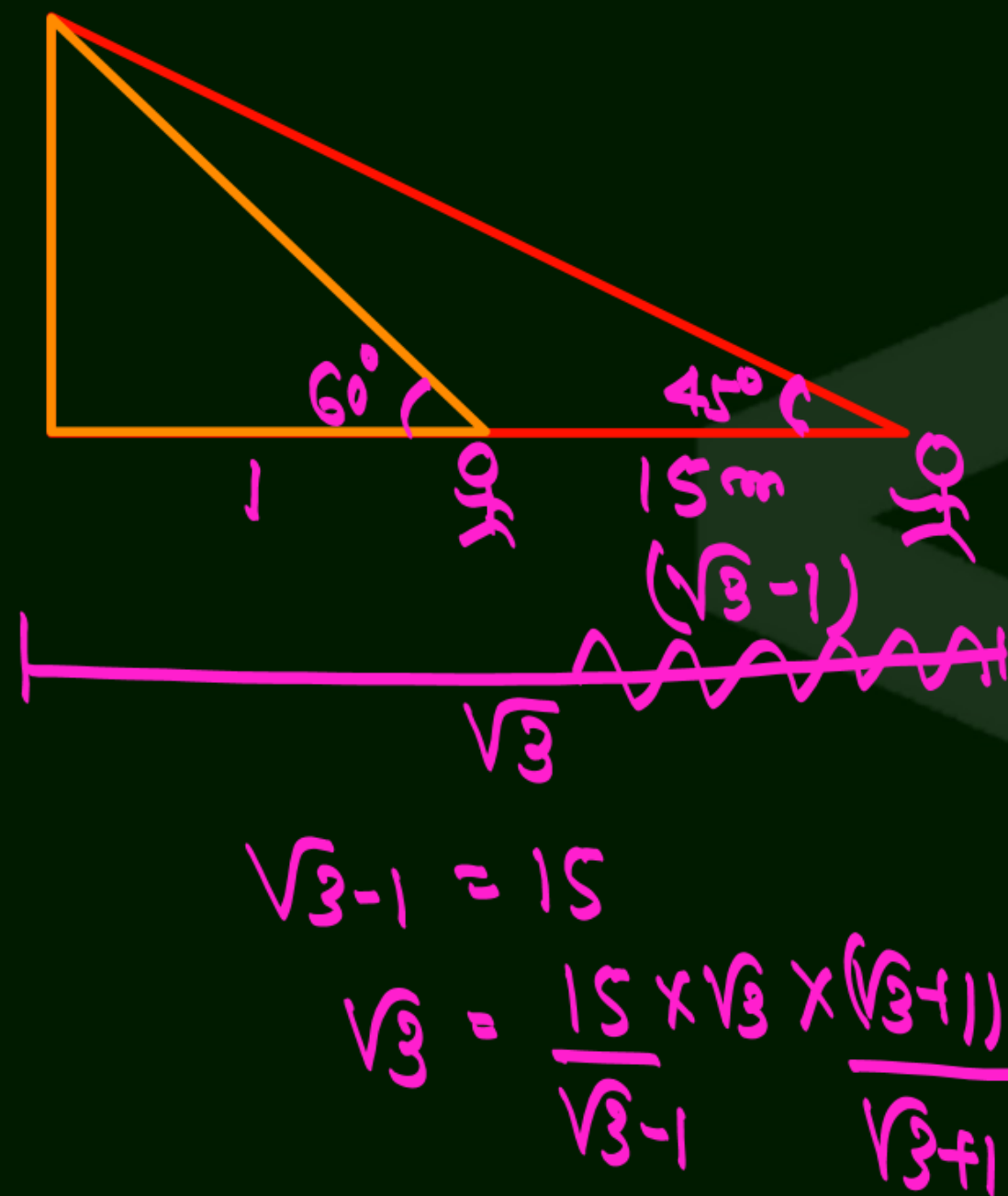
(a) $5\sqrt{3} \text{ m}$
(c) 10 m

(b) $10\sqrt{3} \text{ m}$
(d) 20 m

17. A man observes the top of a pole with an angle of elevation of 45° . He walks 15 m towards the pole, and the angle of elevation becomes 60° . What is the height of the pole?

एक पुरुष किसी खंभे के शीर्ष को 45° के उन्नयन कोण से देखता है। वह खंभे की ओर 15 मीटर चलता है, तब उन्नयन कोण 60° हो जाता है। खंभे की ऊँचाई क्या है?

[SSC CGL 24 Sep 2025 Shift-I]

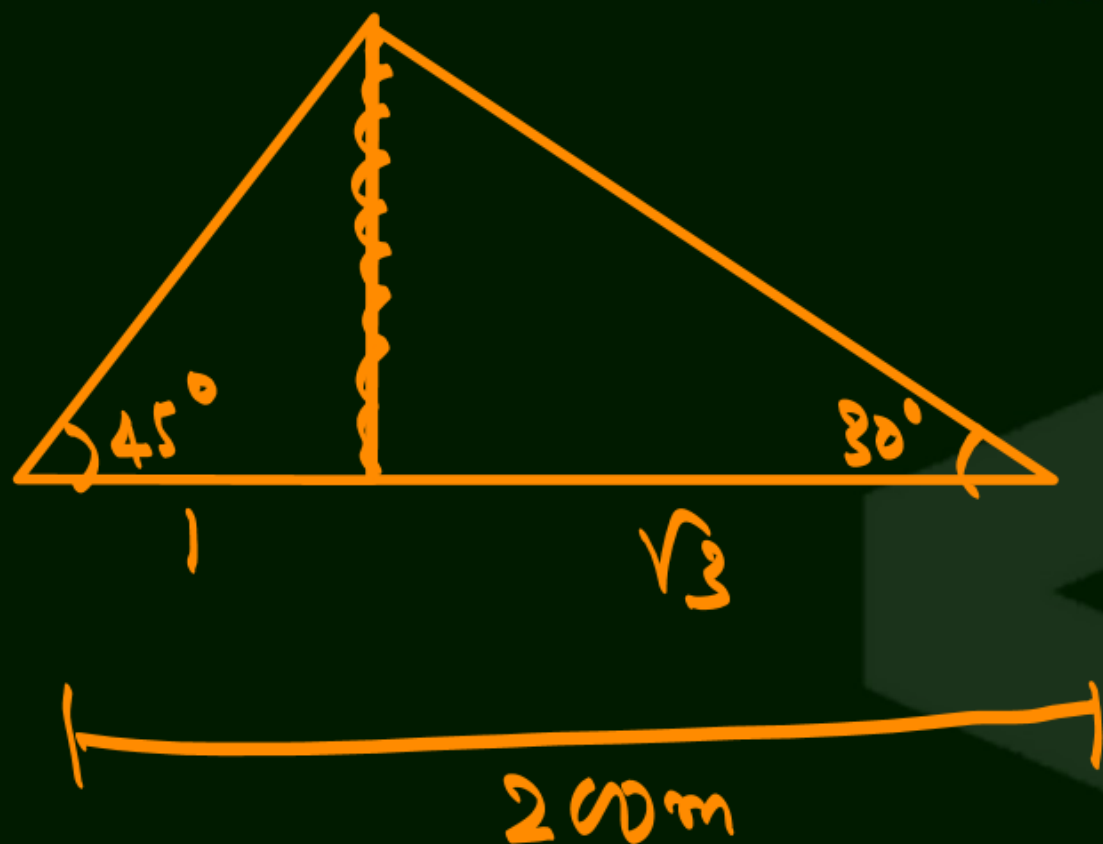


(a) $15(\sqrt{3} - 1) \text{ m}$

(b) $15(\sqrt{3} - 3) \text{ m}$

(c) $\frac{15\sqrt{3}(\sqrt{3}+3)}{2} \text{ m}$

(d) $\frac{15(\sqrt{3}+3)}{2} \text{ m} = \frac{15(3+\sqrt{3})}{2}$
 $= \frac{45 + 15\sqrt{3}}{2}$



18. The angles of elevation of the top of a cliff from two points on the ground, 200 m apart, and on opposite sides of the cliff, are 30° and 45° . What is the height of the cliff?

चट्टान के शीर्ष के उन्नयन कोण ज़मीन पर दो बिंदुओं से, जो एक दूसरे से 200 मीटर की दूरी पर हैं, और चट्टान के विपरीत दिशा में हैं, 30° और 45° हैं। चट्टान की ऊँचाई क्या है?

[SSC CGL 2025]

(a) $100(\sqrt{3} + 1) m$

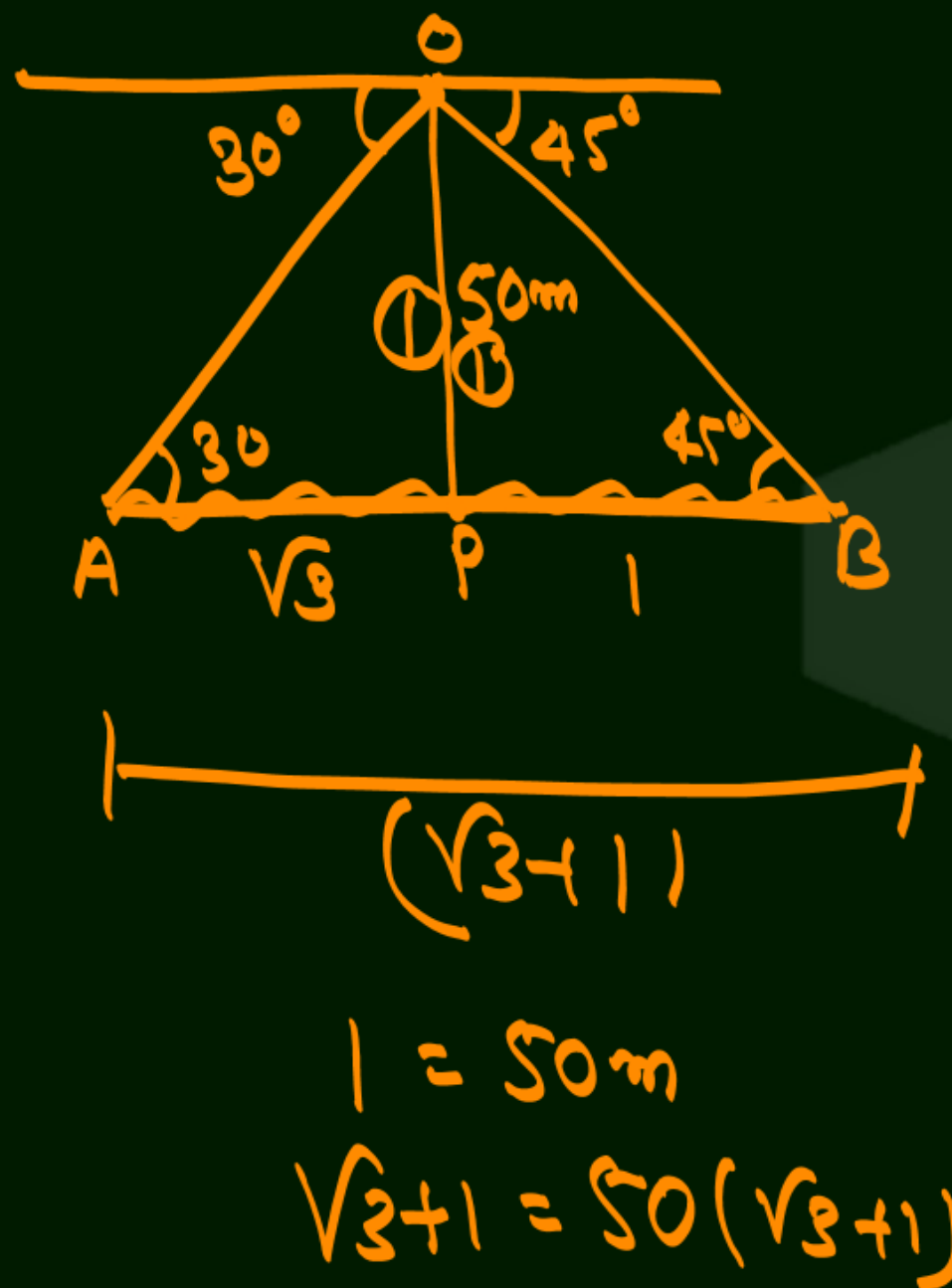
(b) $200(\sqrt{3} - 1) m$

☒ (c) $100(\sqrt{3} - 1) m$

(d) $200 m$

$$\sqrt{3} + 1 = 200 m$$

$$1 = \frac{200}{\sqrt{3} + 1} \times \frac{\sqrt{3} - 1}{\sqrt{3} - 1} = 100(\sqrt{3} - 1)$$



19. From a location on a bridge spanning a river, the angles of depression to the banks on either side are 30° and 45° . Given that the bridge is 50 meters above the banks, what is the width of the river?

एक नदी पर बने पुल पर स्थित स्थान से, दोनों ओर के किनारों पर अवनमन कोण 30° और 45° हैं। यह देखते हुए कि पुल किनारों से 50 मीटर ऊपर है, नदी की चौड़ाई क्या है?

[SSC CGL 2025]

- (a) $50(\sqrt{3} - 1) m$
- (b) $50\sqrt{3} m$
- (c) $50(1 + \frac{1}{\sqrt{3}}) m$
- ✓ (d) $50(\sqrt{3} + 1) m$

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