

Year 12 Trig Functions Worksheet



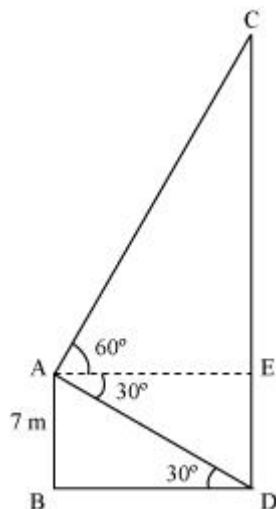
1. If $5 + 2 \cos x = 15 \cos x$, find $\sin x$.
2. $10 \sin x \cos x = 5 \sin 80^\circ$
3. Find all solutions to $2 \sin x = \tan x$, for $-\pi < x < \pi$.
4. $\sec^2 x = 4/3$

5. If $\sin \theta = \frac{1}{3}$, then find the value of $(2 \cot^2 \theta + 2)$.

6. Evaluate
$$\frac{\sec(90^\circ - \theta) \cdot \operatorname{cosec} \theta - \tan(90^\circ - \theta) \cot \theta + \cos^2 25^\circ + \cos^2 65^\circ}{3 \tan 27^\circ \cdot \tan 63^\circ}$$

7. Simplify:
$$\frac{\sin^3 \theta + \cos^3 \theta}{\sin \theta + \cos \theta} + \sin \theta \cos \theta$$

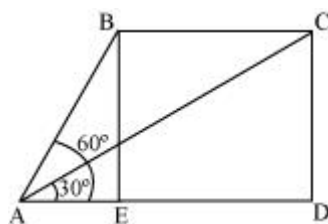
8. From the top of a 7 m high building, the angle of elevation of the top of a tower is 60° and the angle of depression of the foot of the tower is 30° . The given situation is represented as given in the figure below. Find the height of the tower.



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9. The elevation of a hill at a place P due East of it is 45° , and at a place Q due South of P the elevation is 30° . If the distance from P to Q is 500 metres, find the height of the hill.
10. The angle of elevation of a jet fighter from a point A on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° as shown in the figure below:



If the jet is flying at a speed of 720 km/hour, then find the constant height at which the jet is flying.