

TRIGONOMETRY

4 MARCH 2013

Lesson Description

In this lesson, we:

- Revise the trigonometry from Grade 11
- Introduce compound angle identities
- Introduce double angle identities

Key Concepts

After some revision on grade 11 work the compound angle identities will be introduced

Compound Angle Formulae

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

Double Angle Formulae

- $\cos 2A = \cos^2 A - \sin^2 A = 1 - 2\sin^2 A = 2\cos^2 A - 1$
- $\sin 2A = 2\sin A \cos A$

Questions

Question 1

Prove that $\frac{2\cos^2 40^\circ - 2\sin^2 40^\circ}{8\sin 10^\circ} = \frac{1}{4}$

Question 2

Simplify $\frac{\sin 155^\circ \cdot \cos 25^\circ}{\cos 320^\circ}$

Question 3

Prove $\frac{\sin x + \sin 2x}{1 + \cos x + \cos 2x} = \tan x$

Question 4

If $\sin 12^\circ = k$, then determine the following in terms of k :

- $\sin 192^\circ$
- $\cos 258^\circ$
- $\sin 336^\circ$