Trig Compound Angles Recap

$$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B} \qquad \left(A \pm B \neq \left(k + \tfrac{1}{2}\right)\pi\right)$$

Derive the following...

a) $sin2x =$

b) $cos2x =$ (the formula in terms of $cosx$ only please)

c) $sin3x =$

d) Rearrange your formula for $cos2x$ above to make $cos^2 x$ the subject

Without a calculator, find the exact value of...

e) $cos15°$

f) $sin105°$

g) $tan75°$

Given that C and D are acute angles and that $cosC = \frac{12}{13}$ and that $cosD = \frac{3}{5}$, without a calculator find the exact values of...

h) $sinC$

i) $tanC$

j) $cos(C + D)$

k) $cot(C + D)$

Trig Compound Angles Recap - Answers

$$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B} \qquad \left(A \pm B \neq (k + \tfrac{1}{2})\pi\right)$$

Derive the following…

a) $sin2x = 2sinxcosx$

b) $cos2x = 2cos^2x - 1$ (the formula in terms of $cosx$ only please)

c) $sin3x = 3sinx - 4sin^3x$

d) Rearrange your formula for $cos2x$ above to make cos^2x the subject $cos^2x = \frac{cos2x+1}{2}$

Without a calculator, find the exact value of…

e) $cos15° = \frac{1+\sqrt{3}}{2\sqrt{2}} = \frac{\sqrt{6}+\sqrt{2}}{4}$

f) $sin105° = \frac{1+\sqrt{3}}{2\sqrt{2}} = \frac{\sqrt{6}+\sqrt{2}}{4}$

g) $tan75° = \frac{1+\sqrt{3}}{\sqrt{3}-1} = 2 + \sqrt{3}$

Given that C and D are acute angles and that $cosC = \frac{12}{13}$ and that $cosD = \frac{3}{5}$, without a calculator find the exact values of…

h) $sinC = \frac{5}{13}$

i) $tanC = \frac{5}{12}$

j) $cos(C + D) = \frac{16}{65}$

k) $cot(C + D) = \frac{16}{63}$