

7A Additional Formulae Identities

Trigonometric identities

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

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

$$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B} \quad (A \pm B \neq (k + \frac{1}{2})\pi)$$

1. Use $\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$ to show that:

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

2. Use $\sin(\alpha + \beta) = \sin\alpha\cos\beta + \cos\alpha\sin\beta$ and $\cos(\alpha + \beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$
To show that

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

3. Prove that

$$\frac{\cos A}{\sin B} - \frac{\sin A}{\cos B} \equiv \frac{\cos(A + B)}{\sin B \cos B}$$

4. Given that:

$$2 \sin(x + y) = 3 \cos(x - y)$$

Express $\tan x$ in terms of $\tan y$