# TRIGONOMETRY (Q 4 & 5, PAPER 2)

## LESSON NO. 6: SUMS & PRODUCTS

**2006**

4 (b) (i) Express $\sin(3x+60^\circ)-\sin x$ as a product of sine and cosine.

**SOLUTION**

**4 (b) (i)**

$$\sin(3x+60^\circ)-\sin x = 2\cos\left(\frac{4x+60^\circ}{2}\right)\sin\left(\frac{2x+60^\circ}{2}\right)$$

$$= 2\cos(2x+30^\circ)\sin(x+30^\circ)$$

| SUMS $\rightarrow$ PRODUCTS |
|---|
| $\sin A+\sin B = 2\sin(\frac{A+B}{2})\cos(\frac{A-B}{2})$ |
| $\sin A-\sin B = 2\cos(\frac{A+B}{2})\sin(\frac{A-B}{2})$ |
| $\cos A+\cos B = 2\cos(\frac{A+B}{2})\cos(\frac{A-B}{2})$ |
| $\cos A-\cos B = -2\sin(\frac{A+B}{2})\sin(\frac{A-B}{2})$ |