



Air maths tuition

Interact, engage and perform

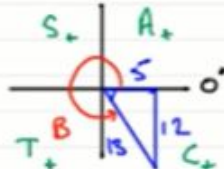
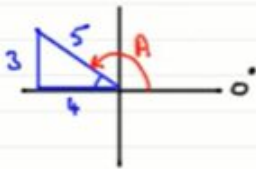
## Exact values of $\sin(A+B)$ etc

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

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

$$\tan(A \pm B) \equiv \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$$

If  $A$  is an obtuse angle and  $B$  is a reflex angle where  $\sin A = \frac{3}{5}$  and  $\cos B = \frac{5}{13}$ . Find the exact value of i)  $\sin(A-B)$  ii)  $\tan(A+B)$ .



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

$$= \left(\frac{3}{5}\right)\left(\frac{5}{13}\right) - \left(-\frac{12}{13}\right)\left(-\frac{4}{5}\right)$$

$$= \frac{15}{65} - \frac{48}{65}$$

$$= -\frac{33}{65}$$

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

$$= \frac{\left(-\frac{3}{4}\right) + \left(-\frac{12}{5}\right)}{1 - \left(-\frac{3}{4}\right)\left(-\frac{12}{5}\right)}$$

$$= \frac{-15 - 48}{20 - 36}$$

$$= \frac{63}{16}$$

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