

6. (a) Use the identity for $\tan(A + B)$ to show that

$$\tan 3\theta \equiv \frac{3 \tan \theta - \tan^3 \theta}{1 - 3 \tan^2 \theta} \quad (4)$$

Given $\tan \beta = \sqrt{6}$

(b) use the answer to part (a) to show that

$$\tan 3\beta = k\sqrt{6}$$

where k is a constant to be found.

(2)