

1) Solve the equation  $32 \cos 5x + 203 \tan 10x = 182$ , given that  $x$  is small.

2) Given that  $\cos x + \sin x = m$  and  $\cos x - \sin x = n$ , where  $m$  and  $n$  are constants, write down the value of  $\cos 2x$  in terms of  $m$  and  $n$

3)  $\int (3x^2 + 10x)\sqrt{x^3 + 5x^2 + 9} \, dx$

4) Solve the equation  $2 \sin 2x = 3 \tan x$ ,  $0 \leq x < 360^\circ$

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## Answers

1) becomes a quadratic  $40x^2 - 203x + 15 = 0$   
 $x = 5, \frac{3}{40}$  N.B. 5 is not small so  $x = \frac{3}{40}$

2)  $mn$

3)  $\frac{2}{3}(x^3 + 5x^2 + 9)^{\frac{3}{2}} + c$

4) 0, 30, 150, 180, 210, 330