

Required to solve  $3\cos 2x + 10\cos x - 1 = 0$ .

Replace  $\cos 2x$  with  $2\cos^2 x - 1$ :

$$3(2\cos^2 x - 1) + 10\cos x - 1 = 0$$

$$6\cos^2 x - 3 + 10\cos x - 1 = 0$$

$$6\cos^2 x + 10\cos x - 4 = 0$$

$$3\cos^2 x + 5\cos x - 2 = 0 \quad (\div \text{ by } 2)$$

$$(3\cos x - 1)(\cos x + 2) = 0$$

So  $3\cos x - 1 = 0$  or  $\cos x + 2 = 0$   
 $3\cos x = 1$   ~~$\cos x = -2$~~   
 $\cos x = \frac{1}{3}$  no solutions since  
 $-1 \leq \cos x \leq 1$

$\therefore x = 1.23$  or  $2\pi - 1.23$   $\frac{S}{T} \mid \frac{A}{C}$   
 $= 1.23$  or  ~~$5.05$~~   $\cos^{-1}(\frac{1}{3}) = 1.23$   
outside domain

So  $x = 1.23$  is the only solution.