

## IB Calculus Problem 015

Let  $f(x) = 3\cos 2x + \sin^2 x$ .

A. Show that  $f'(x) = -5\sin 2x$ .

B. In the interval  $\frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$ , a normal to the graph of  $f$  has equation  $x = k$ .  
Find the value of  $k$ .