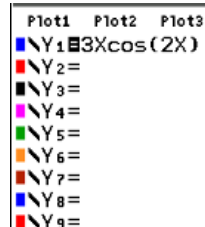


Chapter 6 / **Example 39****Gradient of a trigonometric function**

Find the gradient of the curve $y = 3x \cos(2x)$ at the point $\left(\frac{5\pi}{6}, \frac{5\pi}{4}\right)$.

Press $[f1]$ $[y=]$ to display the equation entry screen.

Type $3x \cos(2x)$ and press $[enter]$ to enter the equation as Y_1 .



Plot1 Plot2 Plot3
 $Y_1 = 3X \cos(2X)$
 $Y_2 =$
 $Y_3 =$
 $Y_4 =$
 $Y_5 =$
 $Y_6 =$
 $Y_7 =$
 $Y_8 =$
 $Y_9 =$

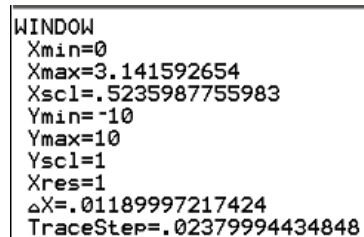
Choose suitable window settings to display the graph.

Press $[f2]$ $[window]$ $[format]$

Set the axes to show $0 \leq x \leq \pi$ with a scale of $\frac{\pi}{6}$.

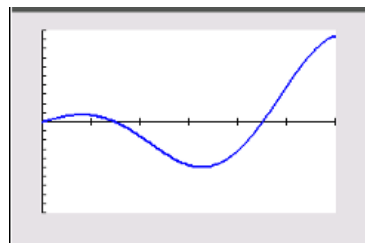
You can leave the other items as they are.

Press $[f5]$ $[graph]$ when you have finished.



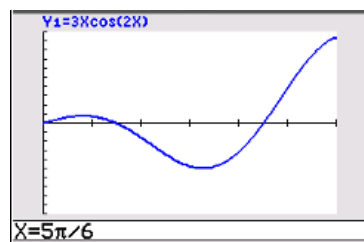
WINDOW
 $Xmin = 0$
 $Xmax = 3.141592654$
 $Xscl = .5235987755983$
 $Ymin = -10$
 $Ymax = 10$
 $Yscl = 1$
 $Xres = 1$
 $\Delta X = .01189997217424$
 $TraceStep = .02379994434848$

The GDC displays the curve $Y_1 = 3x \cos(2x)$ in a suitable window.



To find the gradient at $x = \frac{5\pi}{6}$ press $[2nd]$ $[calc]$ 6:dy/dx.

Type $5\pi \div 6$ 1, the value of the x-coordinate, and press $[enter]$.



The GDC displays a point on $y = 3x \cos(2x)$ and the gradient of the curve at that point.

$$y' \left(\frac{5\pi}{6} \right) = 15.1.$$

