A | Start Here | Given that $y = \cos^4 x$

find the value of $\frac{dy}{dx}$ at $x = \frac{\pi}{4}$.

$\frac{2}{a}$

O | $y = (x^2 - 4)^3 \Rightarrow \frac{dy}{dx} = ax(x^2 - b)^2$ State ab | 5

S | $y = x\cos 2x \Rightarrow \frac{dy}{dx} = \cos ax - bx\sin cx$ State $a+b+c$ | -24

C | The point P with $x = \frac{\pi}{4}$ lies on the curve with equation

$$f(x) = 3\sin 2x + \cos 2x, \quad 0 \le x < 2\pi.$$

Find the gradient at P.

-1

N | The point P with $x = \frac{\pi}{4}$ lies on the curve with equation

$$f(x) = 3\sin 2x + \cos 2x, \quad 0 \le x < 2\pi.$$

Show that an equation of the tangent to the curve at P, is given by

$$4x + 2y = a + \pi$$

State a

18

Y | $y = \frac{5x}{x^3 + 2} \Rightarrow \frac{dy}{dx} = \frac{a(1 - x^3)}{(x^3 + b)^2}$ State $a+b$ | 3

M | $y = x^3 \sin 3x \Rightarrow \frac{dy}{dx} = ax^2(\sin 3x + x\cos 3x)$ State a | -12

O | $y = (1 - x^2)^6 \Rightarrow \frac{dy}{dx} = ax(1 - x^2)^5$. State a | 6

M $y = x^3 \sin 3x \Rightarrow \frac{dy}{dx} = ax^2(\sin 3x + bx\cos 3x)$ State ab

S

$$f(x) = \frac{4x-3}{2x+3},\ x \neq -\frac{3}{2}.$$

Evaluate $f'(3)$. (1)

I

Given that

$$y = x\cos x,\ x \in \mathbb{R}$$

Show clearly that the value of $\frac{dy}{dx}$ at $x = \frac{3\pi}{2}$ is $\frac{a\pi}{b}$ State a^2b (2)

C

A curve has equation

$$y = (x^2 + 3x + 2)\cos 2x.$$

an equation of the tangent to the curve at the point where the curve crosses the y axis. is $y = ax + b$ State $a+b$ (12)

I $y = \frac{\sin x}{x}$ $\frac{dy}{dx} = \frac{ax\cos x + b\sin x}{cx^2}$ state $a+b+c$ (8)

T

The curve C has equation

$$y = \sqrt[3]{1+6x},\ x \geq -\frac{1}{6}.$$

Show clearly that

State a $\frac{dy}{dx} = \frac{a}{y^2}.$ (−2)