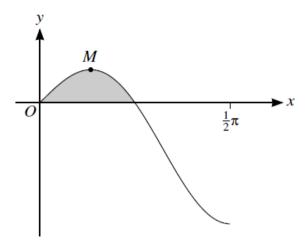
<u>Integration – 2022 A2 June</u>

1. March/2022/Paper_9709/32/No.11



The diagram shows the curve $y = \sin x \cos 2x$ for $0 \le x \le \frac{1}{2}\pi$, and its maximum point M.

(a)	Find the x -coordinate of M , giving your answer correct to 3 significant figures. [6]
	Y
	200
	100

(b)	Using the substitution $u = \cos x$, find the area of the shaded region enclosed by the curve and the x -axis in the first quadrant, giving your answer in a simplified exact form. [5]
	20

2. June/2022/Paper_9709/31/No.6

Let
$$I = \int_0^3 \frac{27}{(9+x^2)^2} dx$$
.

(a)	Using the substitution $x = 3 \tan \theta$, show that $I = \int_0^{\frac{1}{4}\pi} \cos^2 \theta d\theta$.	[4]

(b)	Hence find the exact value of I .	[4]
	.07	
	20	
	200	

3.	June	/2022/Paper_9709/32/No.8(b)	
	(b)	Hence find $\int_{1}^{3} f(x) dx$, giving your answer in a simplified exact form.	[5]
		.89	