

(a) Find the exact coordinates of M .

[4]

[illegible]

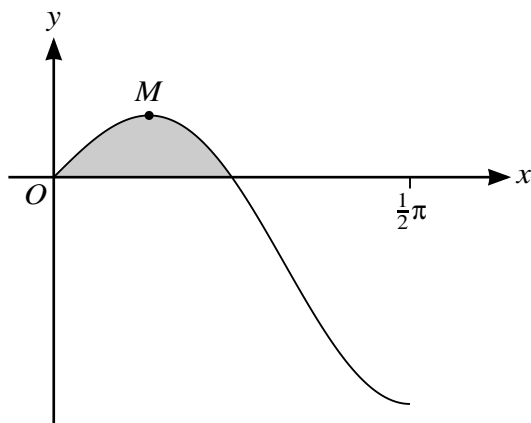
- 2** Find the exact coordinates of the stationary point of the curve $y = e^{2x} \sin 2x$ for $0 \leq x \leq \frac{1}{2}\pi$. [5]

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- 1** Find the exact coordinates of the points on the curve $y = \frac{x}{1-3x}$ at which the gradient of the tangent is equal to 8. [5]

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

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

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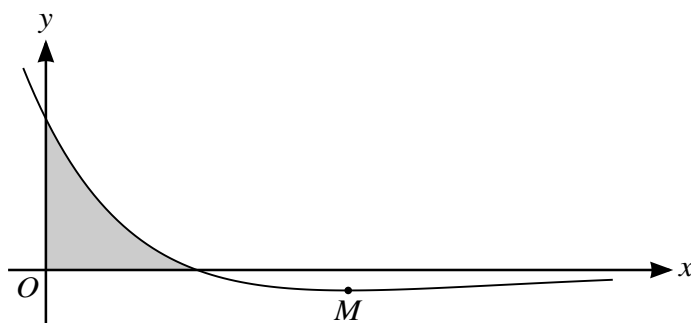
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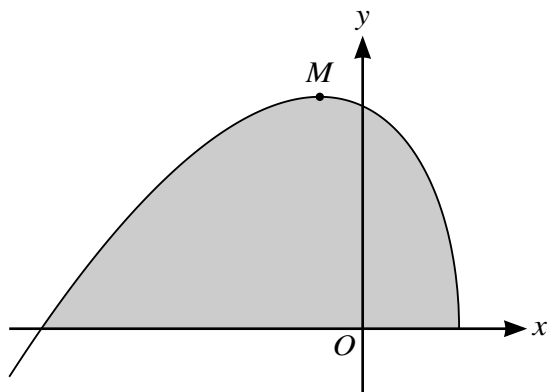
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(a) Find the exact coordinates of M .

[5]

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(a) Find the exact coordinates of M .

[5]

[illegible]

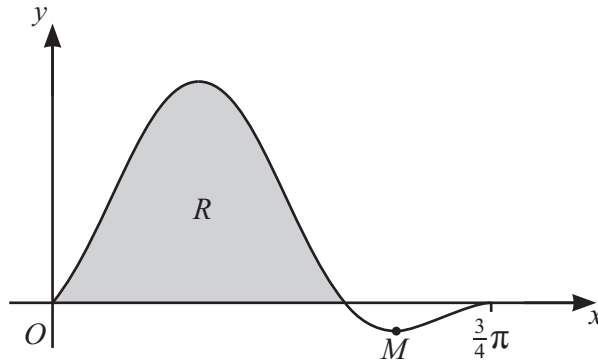
[illegible]

- 9** The equation of a curve is $y = x^{-\frac{2}{3}} \ln x$ for $x > 0$. The curve has one stationary point.

(a) Find the exact coordinates of the stationary point.

[5]

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The diagram shows the curve $y = \sin 2x(1 + \sin 2x)$, for $0 \leq x \leq \frac{3}{4}\pi$, and its minimum point M . The shaded region bounded by the curve that lies above the x -axis and the x -axis itself is denoted by R .

- (a) Given that the x -coordinate of M lies in the interval $\frac{1}{2}\pi < x < \frac{3}{4}\pi$, find the exact coordinates of M . [4]

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9 Let $f(x) = \frac{1}{(9-x)\sqrt{x}}$.

(a) Find the x -coordinate of the stationary point of the curve with equation $y = f(x)$. [4]

[illegible]

- The equation of a curve is $y = e^{-5x} \tan^2 x$ for $-\frac{1}{2}\pi < x < \frac{1}{2}\pi$.

Find the x -coordinates of the stationary points of the curve. Give your answers correct to 3 decimal places where appropriate.

[illegible]

4 The curve with equation $y = e^{2x}(\sin x + 3 \cos x)$ has a stationary point in the interval $0 \leq x \leq \pi$.

(a) Find the x -coordinate of this point, giving your answer correct to 2 decimal places. [4]

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(b) Determine whether the stationary point is a maximum or a minimum. [2]

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4 The equation of a curve is $y = x \tan^{-1}\left(\frac{1}{2}x\right)$.

(a) Find $\frac{dy}{dx}$. [3]

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(b) The tangent to the curve at the point where $x = 2$ meets the y-axis at the point with coordinates $(0, p)$.

Find p . [3]

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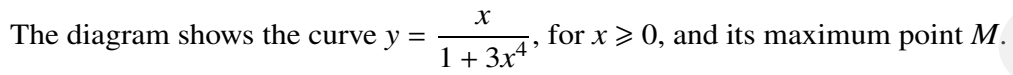
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- 5** Find the exact coordinates of the stationary points of the curve $y = \frac{e^{3x^2-1}}{1-x^2}$. [6]

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- 5** The equation of a curve is $y = \frac{e^{\sin x}}{\cos^2 x}$ for $0 \leq x \leq 2\pi$.

Find $\frac{dy}{dx}$ and hence find the x -coordinates of the stationary points of the curve. [7]

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