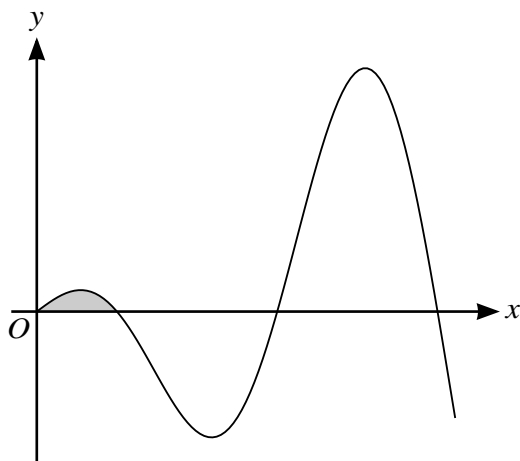


(a) Find the exact coordinates of M .

[4]

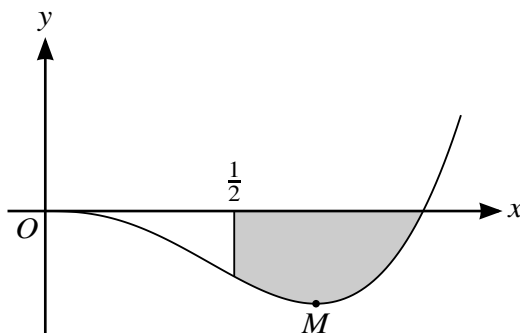
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(a) Find the equation of the tangent to the curve at the point where $x = \frac{1}{2}\pi$.

[4]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. A large, light gray watermark with the text "Pastpaperpen9" is oriented diagonally from the bottom left towards the top right, covering a significant portion of the page.

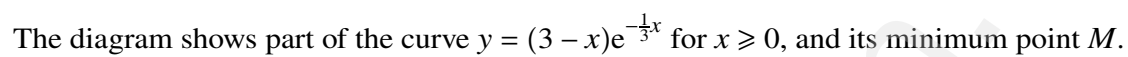


(a) Find the exact coordinates of M .

[4]

[illegible]

- [illegible]



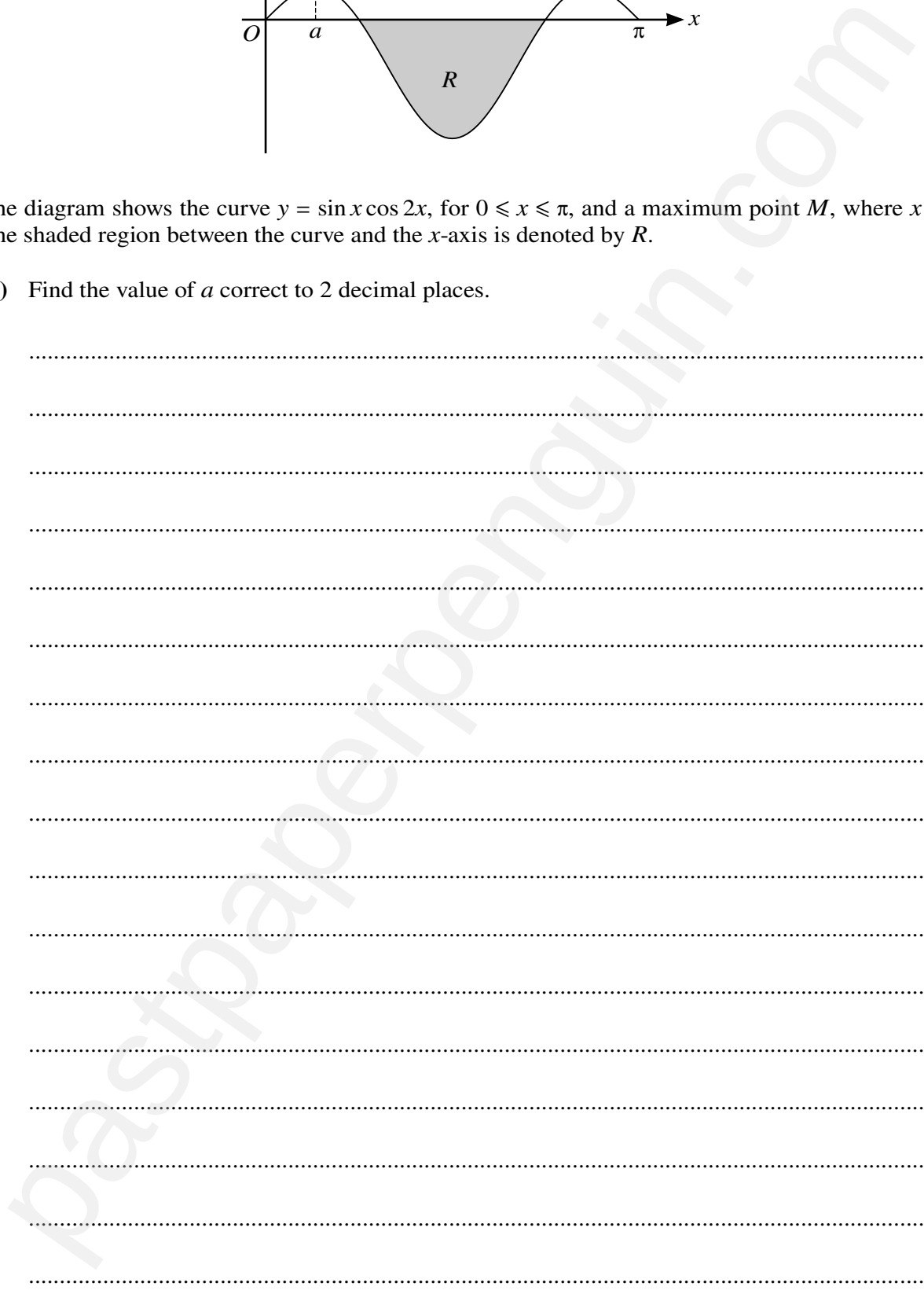
- [5]

[illegible]

- 4** A curve has equation $y = \cos x \sin 2x$.

Find the x -coordinate of the stationary point in the interval $0 < x < \frac{1}{2}\pi$, giving your answer correct to 3 significant figures. [6]

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(a) Find the value of a correct to 2 decimal places. [5]

[illegible]

3 The curve with equation $y = xe^{1-2x}$ has one stationary point.

(a) Find the coordinates of this point.

[4]

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

[2]

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7 Let $f(x) = \frac{\cos x}{1 + \sin x}$.

(a) Show that $f'(x) < 0$ for all x in the interval $-\frac{1}{2}\pi < x < \frac{3}{2}\pi$. [4]

[illegible]

4 The curve $y = e^{-4x} \tan x$ has two stationary points in the interval $0 \leq x < \frac{1}{2}\pi$.

- (a) Obtain an expression for $\frac{dy}{dx}$ and show it can be written in the form $\sec^2 x(a + b \sin 2x)e^{-4x}$, where a and b are constants. [4]

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

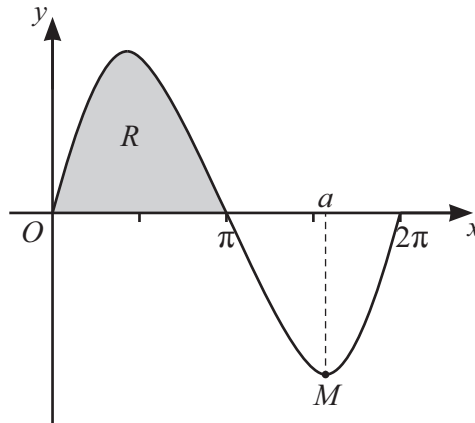
Find the exact x -coordinate of M .

- he diagram shows the curve $y = \sin 2x \cos^2 x$ for $0 \leq x \leq \frac{1}{2}\pi$, and its maximum point M .
- Find the exact x -coordinate of M .

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

Find the exact x -coordinate of M .

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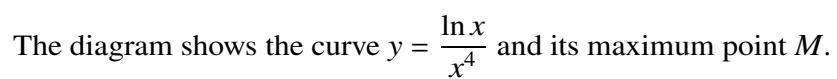


The diagram shows the curve $y = 2 \sin x \sqrt{2 + \cos x}$, for $0 \leq x \leq 2\pi$, and its minimum point M , where $x = a$.

- (a) Find the value of a correct to 2 decimal places. [5]

This image shows a blank sheet of white paper with horizontal dotted lines for writing. The lines are evenly spaced and run across the width of the page. A faint, diagonal watermark reading "Pastpaperbangla" is visible across the center of the page.

Handwriting practice lines consisting of 20 sets of three horizontal dotted lines.



- [4]

[illegible]

(a) Find $f'(x)$ and hence find the exact coordinates of the stationary point of the curve with equation $y = f(x)$. [5]

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal dashed lines for writing. A large, light gray watermark with the text "pastpaperpenguin.com" is oriented diagonally across the page from the bottom left towards the top right. The background is white, and there are no other markings or text present.