

**7** The equation of a curve is  $x^3 + y^2 + 3x^2 + 3y = 4$ .

(a) Show that  $\frac{dy}{dx} = -\frac{3x^2 + 6x}{2y + 3}$ . [3]

pastpaperpenguin.com

[illegible]

**7** The equation of a curve is  $x^3 + 3x^2y - y^3 = 3$ .

(a) Show that  $\frac{dy}{dx} = \frac{x^2 + 2xy}{y^2 - x^2}$ . [4]

Fastpaperpenquin.com

[illegible]

**7** The equation of a curve is  $\ln(x + y) = x - 2y$ .

(a) Show that  $\frac{dy}{dx} = \frac{x+y-1}{2(x+y)+1}$ . [4]

pastpaperpenguin.com

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal dotted lines spaced evenly down the page. A large, light gray watermark with the text "pastpaperpenquinn.com" is oriented diagonally from the bottom left towards the top right, covering most of the page area. The background is white, and there are no other markings or text present.

**7** The equation of a curve is  $x^3 + 3xy^2 - y^3 = 5$ .

(a) Show that  $\frac{dy}{dx} = \frac{x^2 + y^2}{y^2 - 2xy}$ . [4]

Fastpaperpenquin.com

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

**6** The equation of a curve is  $2y^2 + 3xy + x = x^2$ .

**(a)** Show that  $\frac{dy}{dx} = \frac{2x-3y-1}{4y+3x}$ . [4]

pastpaperpenguin.com

www.pastpaperpenguin.com

- 5** The equation of a curve is  $x^2y - ay^2 = 4a^3$ , where  $a$  is a non-zero constant.

(a) Show that  $\frac{dy}{dx} = \frac{2xy}{2ay - x^2}$ . [4]

pastpaperpenguin.com

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal dashed lines spaced evenly down the page, providing a guide for handwriting practice. A large, light gray watermark is oriented diagonally from the bottom left towards the top right, displaying the text "basstrapaperpenquin.com". The background is white, and there are no other markings or text present.

**9** The equation of a curve is  $ye^{2x} - y^2e^x = 2$ .

**(a)** Show that  $\frac{dy}{dx} = \frac{2ye^x - y^2}{2y - e^x}$ . [4]

pastpaperpenguin.com

[illegible]

Find the gradient of the curve at the point  $(1, 0)$ .

[4]

[illegible]

- Find the gradient of the curve at the point where  $x = 0$ .

[5]

pastpaperpenguin.com



DO NOT WRITE IN THIS MARGIN

Handwriting practice area with horizontal dotted lines.

pastpaperpenguin.com



**7** The equation of a curve is  $3x^2 + 4xy + 3y^2 = 5$ .

(a) Show that  $\frac{dy}{dx} = -\frac{3x+2y}{2x+3y}$ . [4]

Fastpaperpenquin.com

[illegible]

- 4 The equation of a curve is  $ye^{2x} + y^2e^x = 6$ .

Find the gradient of the curve at the point where  $y = 1$ .

[6]

pastpaperpenguin.com

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

**8** The equation of a curve is  $x^3 + y^3 + 2xy + 8 = 0$ .

(a) Express  $\frac{dy}{dx}$  in terms of  $x$  and  $y$ .

[4]

This image shows a blank sheet of white paper designed for handwriting practice. It features multiple sets of horizontal dashed lines spaced evenly down the page. A large, light gray watermark with the text "pastpaperpenguin.com" is oriented diagonally from the bottom-left towards the top-right, spanning across the entire page. The watermark is semi-transparent, allowing the ruled lines to remain visible beneath it. There are no other markings, text, or illustrations on the page.

[5]

[illegible]