

- 1** The equation of a curve is such that  $\frac{dy}{dx} = \frac{3}{x^4} + 32x^3$ . It is given that the curve passes through the point  $(\frac{1}{2}, 4)$ .

Find the equation of the curve.

[4]

[illegible]

- 9** A curve has equation  $y = f(x)$ , and it is given that  $f'(x) = 2x^2 - 7 - \frac{4}{x^2}$ .

(a) Given that  $f(1) = -\frac{1}{3}$ , find  $f(x)$ .

[4]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

- 8** The equation of a curve is such that  $\frac{dy}{dx} = 3x^{\frac{1}{2}} - 3x^{-\frac{1}{2}}$ . The curve passes through the point (3, 5).

**(a)** Find the equation of the curve.

[4]

[illegible]

- 1** A curve with equation  $y = f(x)$  is such that  $f'(x) = 2x^{-\frac{1}{3}} - x^{\frac{1}{3}}$ . It is given that  $f(8) = 5$ .

Find  $f(x)$ .

[4]

This image shows a full page of a handwriting practice worksheet. It consists of multiple rows of horizontal dashed lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no margins or additional markings.

- 1** The equation of a curve is such that  $\frac{dy}{dx} = \frac{4}{(x-3)^3}$  for  $x > 3$ . The curve passes through the point  $(4, 5)$ .

Find the equation of the curve.

[3]

This image shows a full page of primary-ruled paper. It features multiple sets of horizontal dotted lines spaced evenly down the page, providing a guide for handwriting practice. The background is white, and there are no other markings or text present.

- 4** A curve is such that  $\frac{dy}{dx} = \frac{8}{(3x+2)^2}$ . The curve passes through the point  $(2, 5\frac{2}{3})$ .

Find the equation of the curve.

[4]

This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dashed lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, leaving ample room for writing practice. There is no text or other markings on the page.

- 2 The equation of a curve is such that  $\frac{dy}{dx} = 12\left(\frac{1}{2}x - 1\right)^{-4}$ . It is given that the curve passes through the point  $P(6, 4)$ .

(a) Find the equation of the tangent to the curve at  $P$ . [2]

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(b) Find the equation of the curve. [4]

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- 2** The equation of a curve is such that  $\frac{dy}{dx} = \frac{1}{(x-3)^2} + x$ . It is given that the curve passes through the point (2, 7).

Find the equation of the curve.

[4]

This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- 3 The equation of a curve is such that  $\frac{dy}{dx} = 3(4x - 7)^{\frac{1}{2}} - 4x^{-\frac{1}{2}}$ . It is given that the curve passes through the point  $(4, \frac{5}{2})$ .

Find the equation of the curve.

[4]

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- 10** The equation of a curve is such that  $\frac{d^2y}{dx^2} = 6x^2 - \frac{4}{x^3}$ . The curve has a stationary point at  $(-1, \frac{9}{2})$ .

- (a)** Determine the nature of the stationary point at  $(-1, \frac{9}{2})$ . [1]

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- (b) Find the equation of the curve. [5]

[illegible]