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

Find the equation of the curve. [4]

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

(a) Given that $f(1) = -\tfrac{1}{3}$, find $f(x)$. [4]

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]

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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]

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

Find the equation of the curve. [3]

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

Find the equation of the curve. [4]

2   The equation of a curve is such that $\dfrac{dy}{dx} = 12\left(\tfrac{1}{2}x - 1\right)^{-4}$. 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 $\dfrac{dy}{dx} = \dfrac{1}{(x-3)^2} + x$. It is given that the curve passes through the point $(2, 7)$.

Find the equation of the curve. [4]

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

Find the equation of the curve. [4]

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

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

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

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