

 $y = e^x x^2$ find $\frac{dy}{dx}$

QUESTION 1 **QUESTION 2 QUESTION 3 QUESTION 4**

QUESTION 5

 $y = \frac{x^3}{x^2 + 3x}$ find $\frac{dy}{dx}$

Express $4x^2 + 6x - 3$ in the form $a(x + b)^2 + c$ State the range of the function $f(x) = 4x^2 + 6x - 3$

The line x + y = k where k is a constant is a tangent to the circle $x^2 + y^2 = 2x$. Find the possible values of k (leave your answers in surd form)

Find the finite area bounded by the curve $y = 16 - 4x^2$ and the x-axis

 $y = x^2 sinx$ find $\frac{dy}{dx}$

 $y = \frac{x^2}{\sqrt{x+1}}$ find $\frac{dy}{dx}$

QUESTION 2 QUESTION 3 **QUESTION 4** QUESTION 5

QUESTION 1

Given that $f(x) = x^2 + 1$ and g(x) = 3x, solve the equation fg(x) = gf(x)

A circle has equation $x^2 + y^2 - 4y - 14 = 0$. A chord of the circle has length 8. Find the perpendicular distance from the chord to the centre of the circle.

Evaluate
$$\int_{2}^{4} 1 + \frac{4}{x^{3}} dx$$

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 $y = \sqrt{x}e^{2x}$ find $\frac{dy}{dx}$

 $y = \frac{e^x}{x^2 + 1}$ find $\frac{dy}{dx}$

QUESTION 1 **QUESTION 2** QUESTION 3 **QUESTION 4 QUESTION 5**

The function $f(x) = 16 - 6x - x^2$ $x \in \mathbb{R}$ Find the range of f(x)

Find the equation of the tangent to the circle $(x + 1)^2 + (y - 3)^2 = 13$ at the point (2, 5)

Find the value of the constant c given that

 $\int_0^4 c\sqrt{x} \, dx = 64$

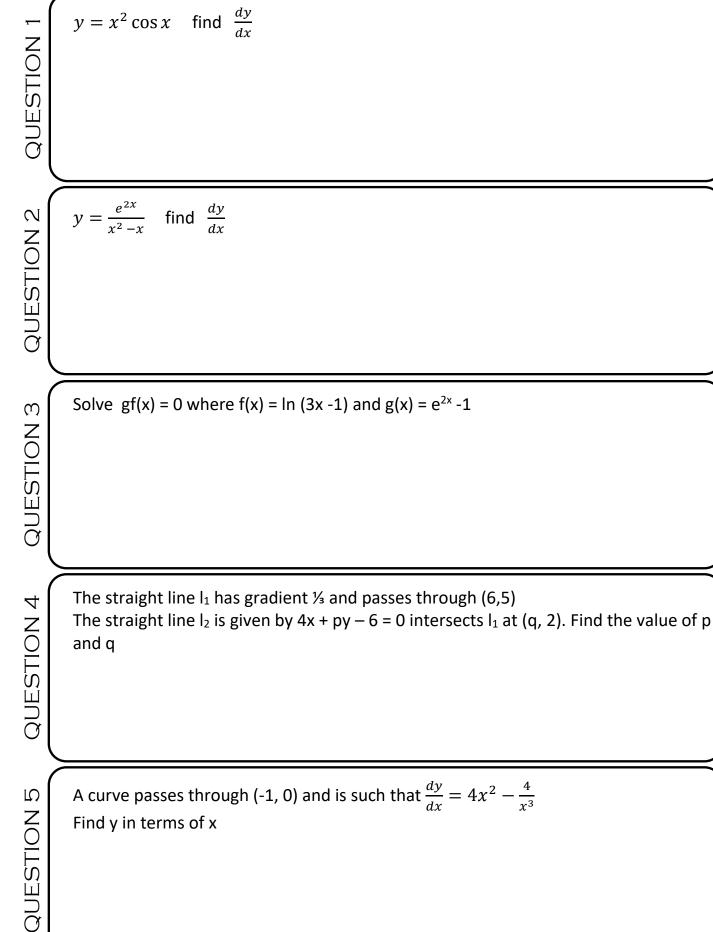
 $y = (x+3)^3 x^2$ find $\frac{dy}{dx}$ QUESTION 1 $y = \frac{e^{2x} + x}{x+1}$ find $\frac{dy}{dx}$ **QUESTION 2** $f(x) = \frac{ax+b}{x-b}$ Find $f^{-1}(x)$ **QUESTION 3** $x \neq b$ The line with equation y = x + c is a tangent to the circle **QUESTION 4** $x^2 + y^2 - 8x + 6y + 17 = 0$ Find the 2 possible values of c Evaluate $\int_{1}^{2} \left(\frac{8}{x^{3}} + x^{3}\right) dx$ **QUESTION 5**

 $y = \sqrt[3]{x} e^{3x}$ find $\frac{dy}{dx}$ QUESTION 1 $y = \frac{\sqrt{x}}{x^2 + 2x}$ find $\frac{dy}{dx}$ **QUESTION 2** $f(x) = 2e^{3x} + 1$ **QUESTION 3** State the range and domain of $f^{-1}(x)$ **QUESTION 4** coordinates -1 and 2 respectively. Find the length of the line AB QUESTION 5

The curve C has equation $y = x^2(x - 1)$ The points A and B lie on the curve and have x

Find the region enclosed by the curve $y = x^4 + 5$ and the line y = 8

find $\frac{dy}{dx}$



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