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11. Calculate the value of the limit $\lim_{v \rightarrow 2} \frac{v^2 - 4}{v^4 - 16}$

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12. Find the derivatives of the functions (a) $y = \frac{2x + 5}{3x - 2}$ (b) $f(x) = (x^2 - 1)(x^2 + x - 2)$

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13. Given the equation $x^3 + xy - 2x = 1$, find $\frac{dy}{dx}$ by differentiating implicitly.

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14. Determine $\frac{d^2y}{dx^2}$ by implicit differentiation if $3x^2 - 4y^2 = 7$.

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Part C (Answer any 2 question(s). Each carries 14 marks)

15. (a) Evaluate $\int_0^1 \frac{x^4}{x^2 + 1} dx$.

(b) Evaluate $\int \sin^3 x dx$.

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16. Using partial fractions, evaluate the integral $\int \frac{6x + 7}{(x + 2)^2} dx$.

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17. If $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$, find A^{-1} and verify that $A^3 = A^{-1}$.

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