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Code: 9RBS101

R09

B.Pharm I Year (R09) Supplementary Examinations December 2017

REMEDIAL MATHEMATICS

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Find the middle terms in the expansion of $\left(\frac{2}{3}x^2 - \frac{3}{2x}\right)^{11}$.

(b) Solve using Cramer's rule $4x + y = 7; 3y + 4z = 5; 3z + 5x = 2$.

2 (a) If $\sin\theta = 3/5$ and θ is acute, find the value of $2\tan\theta + 3\sec\theta + 4\sec\theta\,.\,\mathrm{cosec}\,\theta$.

(b) A person standing on the bank of a river observes that the angle of elevation of the top of a tree on the opposite bank is 60; when he retires 40 feet from the bank he finds the angle to be 30^o. Find the height of the tree and breadth of the river.

3 (a) Show that the lines $5x - 11y + 1 = 0, 6x + 13y - 25 = 0\ and\ x - 2y = 0$ are concurrent. Also find the point of concurrency.

(b) Write the characteristics of the hyeprbolac $\frac{x^2}{25} - \frac{y^2}{16} = 1$.

4 (a) Differentiate $\frac{x^2-3x+5}{x^2+3x+5}$ with respect to x.

(b) If $ax^2 + 2hxy + by^2 = 1\ show\ that\ \frac{d^2y}{dx^2} = \frac{h^2-ab}{(hx+by)^3}$.

5 (a) Find the maxima and minima of the function $f(x) = 3x^3 - 9x^2 - 27x + 30$.

(b) Find $\frac{dy}{dx}, if\ y = x^2.e^x(\cos x - 4)$.

6 (a) Evaluate $\int \frac{dx}{1+\cot x}$.

(b) Evaluate $\int x^2.cos^2 x dx$.

(c) Find the area bounded by the curve y = sin x, the x-axis and the ordinates x = 0 and x = 2π.

7 (a) Solve $(x+1)\frac{dy}{dx} + 1 = 2e^{-y}$

(b) Solve $\frac{dy}{dx} + xy = xy^2, when\ y = 4\ and\ x = 1$.

8 A radioactive substance has half-life of h-days. Find a formula for its mass m interms of t, if the initial mass is m_0. What are its initial decay rates?

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