Islamabad Model College for Boys H 9, Islamabad

F.Sc. Part II

Assignment No 1 **Week 1**

Topics: Chapter 7, Ex-7.3, 7.4 & 7.5

Short Questions

Q1. Prove that the line segment joining the midpoints of two sides of a triangle is parallel to the third side.

Q2. Find a number z so that the triangle with the vertices A(1,-1,0), B(-2,2,1) and C(0,2,z) is a right triangle with right angle at C.

Q3. Prove that the four vectors A(-3,5,-4), B(-1,1,1) C(-1,2,2) and D(-3,4,-5) are coplanar.

Q4. Prove that $Cos(\alpha + \beta) = cos\alpha cos\beta - sin\alpha sin\beta$.

Long Questions

Q1. Prove that $sin(\alpha + \beta) = sin\alpha cos\beta + cos\alpha sin\beta$.

Q2. Show that the midpoint of hypotenuse of a right triangle is equidistant from its vertices.

Q3. Find the volume of the tetrahedron whose vertices are A(2,1,8), B(3,2,9) C(2,1,4) and D(3,3,10).

Islamabad Model College for Boys H 9, Islamabad

F.Sc. Part II

Assignment No 2 **Week 2**

Topics: Chapter 2, Ex-2.1, 2.2 & 2.3

Short Questions

Q1. Find by definition the derivative w.r.t x of $y = 2 - \sqrt{x}$.

Q2. Find by definition the derivative w.r.t x of $y = x^{\frac{3}{2}}$.

Q3. Find by first principle the derivative w.r.t z of $y = \frac{1}{(az-b)^7}$.

Q4. Find the derivative of the function y=(x-5)(3-x)

Long Questions

Q1. Find by definition the derivative w.r.t x of $y = x^{-100}$.

Q2. Find by first principle the derivative w.r.t x of $y = \frac{1}{x-a}$.

Q3. If $y = x^4 + 2x^2 + 2$, prove that $\frac{dy}{dx} = 4x\sqrt{y-1}$

Islamabad Model College for Boys H 9, Islamabad

F.Sc. Part II

Assignment No 3 **Week 3**

Topics: Chapter 2, Ex-2.4 & 2.5

Short Questions

Q1. Find by definition the derivative of $y = sin2x$.

Q2. By making suitable substitution find the derivative of $y = \sqrt{x + \sqrt{x}}$.

Q3. Find $\frac{dy}{dx}$ if *3x-4y+7=0.*

Q4. Find $\frac{dy}{dx}$ if $y(x^2 - 1) = x\sqrt{x^2 + 4}$.

Long Questions

Q1. Find by definition the derivative w.r.t x of $y = sin2x + cos2x$.

Q2. If $y = \sqrt{tanx + \sqrt{tanx + \sqrt{Tanx}}} + \cdots \infty$, prove that $(2y - 1)\frac{dy}{dx} = sec^2x$.

Q3. Show that $\frac{dy}{dx} = \frac{y}{x}$ if $\frac{y}{x} = tan^{-1}\frac{x}{y}$.