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|---|---|---|---|
| Duration: | 15 Minutes | Total Marks: | 10 |
| Paper Date: | 18-3-24 | Weight | 3.3% |
| Name & Section: | [redacted] | | |
| Exam: | Quiz 2 | Roll No: | [redacted] |

Instruction/Notes: Attempt both questions.

**Q1)** Find the area of the triangle with the given vertices.

A(2, 0), B(3, 4), C(−1, 2)

Area of triangle $= \frac{1}{2} \| \overrightarrow{P_A P_B} \times \overrightarrow{P_A P_C} \|$

$= \frac{1}{2} \| (3-2, 4-0) \times (-1-2, 2-0) \|$

$= \frac{1}{2} \| (1, 4) \times (-3, 2) \|$

$= \frac{1}{2} \| (4 \times 2 - 0 \times 0), (1 \times -3 - 0 \times 0) \|$

$= \frac{1}{2} \| (8, -3) \| = \frac{1}{2} \sqrt{8^2 + (-3)^2}$

$= \frac{1}{2} \sqrt{73}$ — Ans

**Q2)** Determine whether the indicated set of matrices is a subspace of $M_{22}$.

The set $W$ consisting of all matrices of the form $\begin{bmatrix} x & 0 \\ y & 0 \end{bmatrix}$.

To determine if is a sub-space & consider that original $M_{22}$ is a vector space.