

**Answer on Question #44564 – Math – Analytic Geometry**

Determine the length of the perimeter of a triangle whose vertices are  $L(-1: 2)$ ,  $M(1: 6)$  and  $N(4: 0)$ .

**Solution.**

Note that the length of a segment  $AB$  with the ends  $A(x, y), B(z, t)$  can be computed in the following way:

$$|AB| = \sqrt{(x - z)^2 + (y - t)^2};$$

So:

$$|LM| = \sqrt{(-1 - 1)^2 + (2 - 6)^2} = \sqrt{4 + 16} = 2\sqrt{5};$$

$$|MN| = \sqrt{(1 - 4)^2 + (6 - 0)^2} = \sqrt{9 + 36} = 3\sqrt{5};$$

$$|LN| = \sqrt{(-1 - 4)^2 + (2 - 0)^2} = \sqrt{25 + 4} = \sqrt{29};$$

$$P = |LM| + |MN| + |LN| = 2\sqrt{5} + 3\sqrt{5} + \sqrt{29} = 5\sqrt{5} + \sqrt{29}.$$

**Answer.**

$$5\sqrt{5} + \sqrt{29}.$$