1. Find the area of the triangle \( \triangle ABC \), where \( A = (0, 0, 1) \), \( B = (1, 2, 1) \) and \( C = (3, 1, 3) \).

**Solution:** Note that any two adjacent sides of the triangle are also the adjacent sides of a parallelogram. Pick two adjacent sides and find their vector representations. We find \( \vec{AB} = (1, 2, 0) \) and \( \vec{AC} = (3, 1, 2) \). The cross product of these two vectors is:

\[
\vec{AB} \times \vec{AC} = \begin{vmatrix}
i & j & k \\
1 & 2 & 0 \\
3 & 2 & 1 \\
\end{vmatrix} = 2\vec{i} - 1\vec{j} - 4\vec{k}
\]

The magnitude of this cross product, \( \sqrt{2^2 + (-1)^2 + (-4)^2} = \sqrt{21} \) gives the area of the parallelogram formed by the two adjacent sides, and therefore half of this magnitude gives the area of the triangle formed by the adjacent sides. So, the answer is \( \frac{\sqrt{21}}{2} \). (Note that the area of a triangle in the \( xy \) plane can be calculated in the same manner, because points in \( \mathbb{R}^2 \) can be thought of as points in \( \mathbb{R}^3 \).)