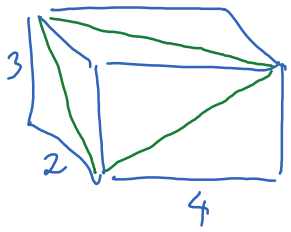
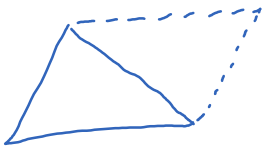
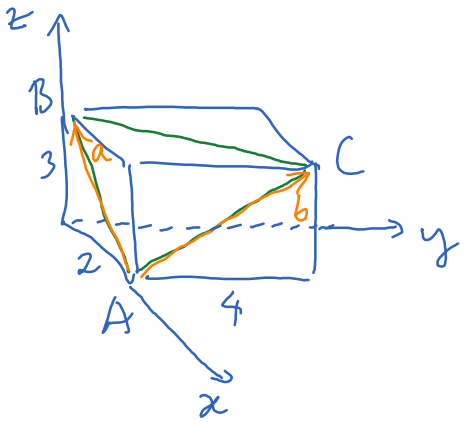
The following example was given in class on Jan 15, 2021.

Ex: Find the area of the green triangle.



The area of a triangle is equal to a half of the area of the parallelogram.





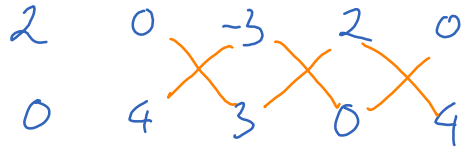
The area of the green triangle is

$\frac{1}{2}|a \times b|$.

$$a = \vec{AB} = \langle 2-0, 0-0, 0-3 \rangle = \langle 2, 0, -3 \rangle$$

$$b = \vec{AC} = \langle 2-2, 4-0, 3-0 \rangle = \langle 0, 4, 3 \rangle$$

To find $a \times b$,



$a \times b = \langle 12, -6, 8 \rangle$

Area of triangle $= \frac{1}{2}|a \times b| = \frac{1}{2}\sqrt{12^2+(-6)^2+8^2} = \ldots$