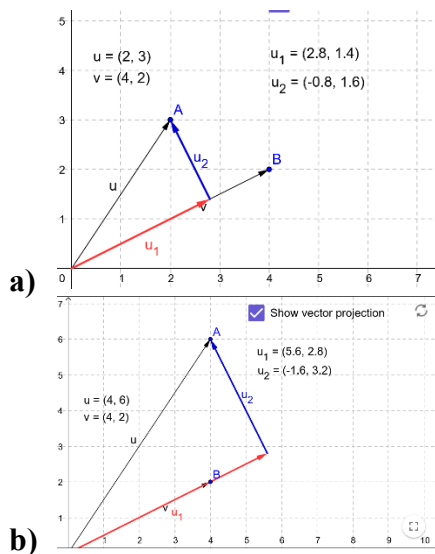
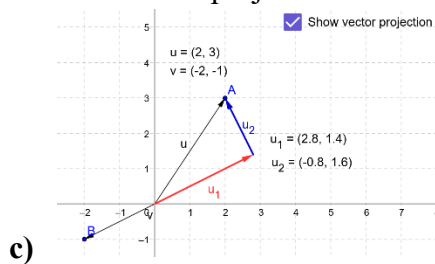


## Exercise 1.



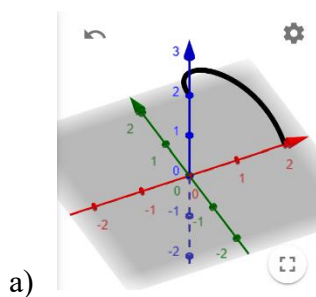
a. The projection  $u_1$  is longer than  $v$  compared to the first one.



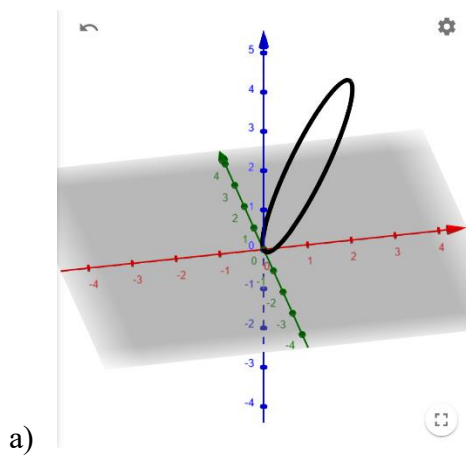
a. The projection  $u_1$  is going the opposite direction of  $v$ .

d)  $\text{Proj}_v(\text{au})$  would equal  $\text{a} \cdot \text{proj}_v(u)$ .  $\text{proj}_{\text{au}}(u) = \text{proj}_v(u)$  since the length of  $v$  does not affect the projection of  $u$ .

## Exercise 2.



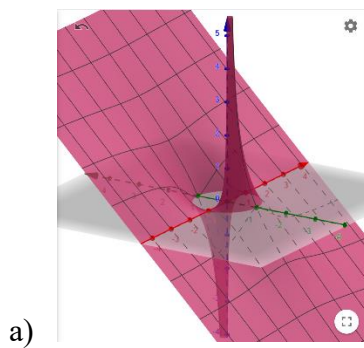
### Exercise 3.



### Exercise 4.

a) Domain:  $(x^2+y^2 \neq 0)$

### Exercise 5.



- a. It looks similar to a plane away from 0, because the term  $(1/(x^2+y^2))$  approaches 0 as it moves further away from  $(0,0)$ , which makes the whole function look like the plane  $f(x,y) = y$ .

### Exercise 6.

