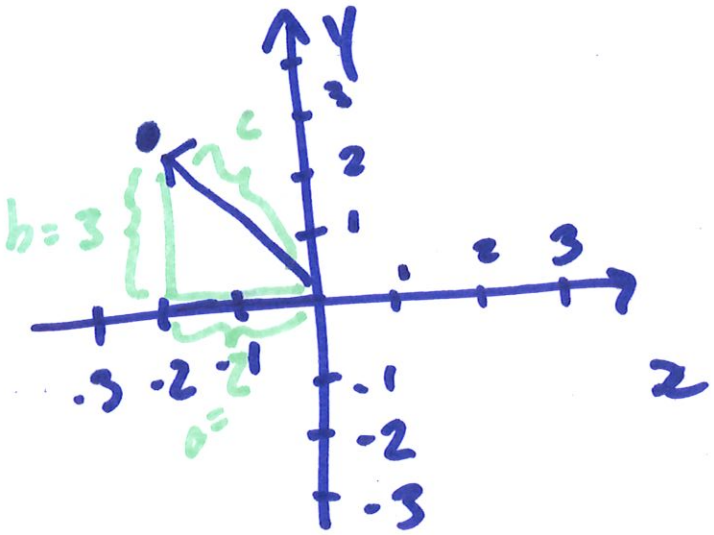
Roughly Chapters 12 - 16.3 Stewart

- review of lin. alg.
- curves $f(t) = (u(t), v(t), w(t))$
- functions of several variables

  $f(x, y, z)$

  - derivatives
    - rules
    - geometry
    - optimization
  - integrals
  - change of variable

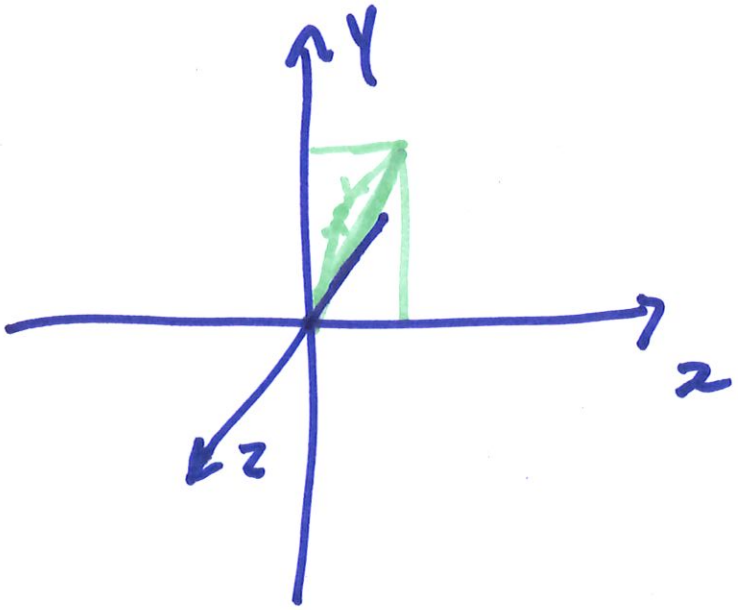


$(-2, 3)$

$a^2 + b^2 = c^2$

$c = \sqrt{a^2 + b^2}$

$= \sqrt{2^2 + 3^2} = \sqrt{13}$



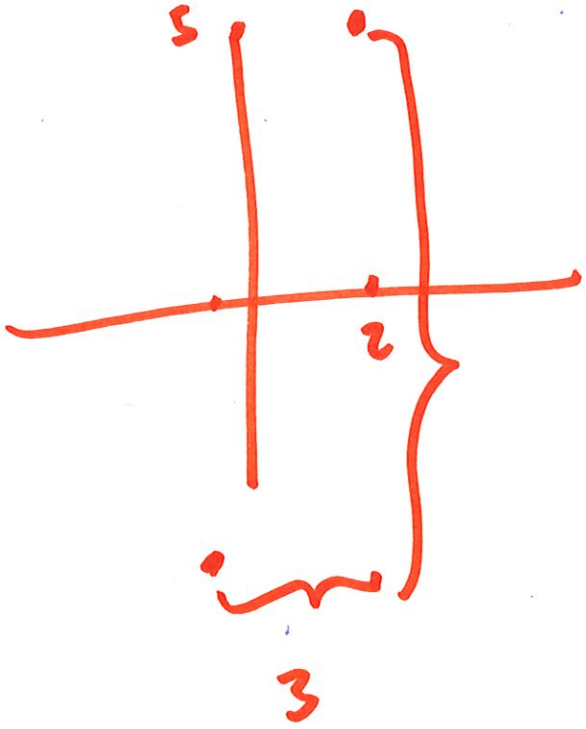
- right-hand rule

length of $(-1, 3, -4)$

$$\sqrt{(-1)^2 + (3)^2 + (-4)^2}$$

$$= \sqrt{1 + 9 + 16} = \sqrt{26}$$

• distance between (2, 5) and (-1, 4)



$2-(-1)=3$

$5-(4)=9$

$\sqrt{3^2+9^2}=\sqrt{90}$

dist. between (1, -2, 5) and (-3, 1, 3)

$1-(-3)=4$

$-2-1=-3$

$5-3=2$

$\sqrt{16+9+4}=\sqrt{29}$