

a) MYTHOLOGY

1) "advanced" math involves bigger formulas?

2) do more examples !

3) give more applications!

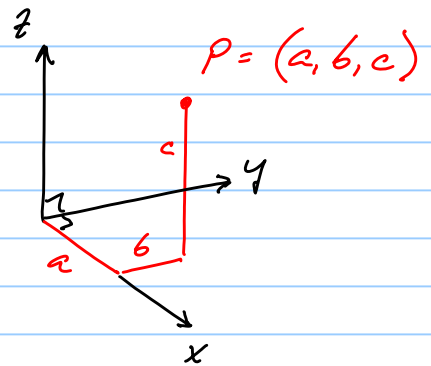
6) WEEK 1 READING
- sections 12.1-4

3D coordinates
vectors
dot product
cross product

c) COORDINATES IN 3 DIMENSIONS (s12.1)

- right-hand rule avoids
mirror-inverted math!

- a POINT can be uniquely
identified in 3D space ()



(p 794)

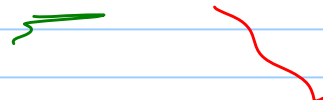
- points in the 2D x,y-plane have

d) SETS OF POINTS

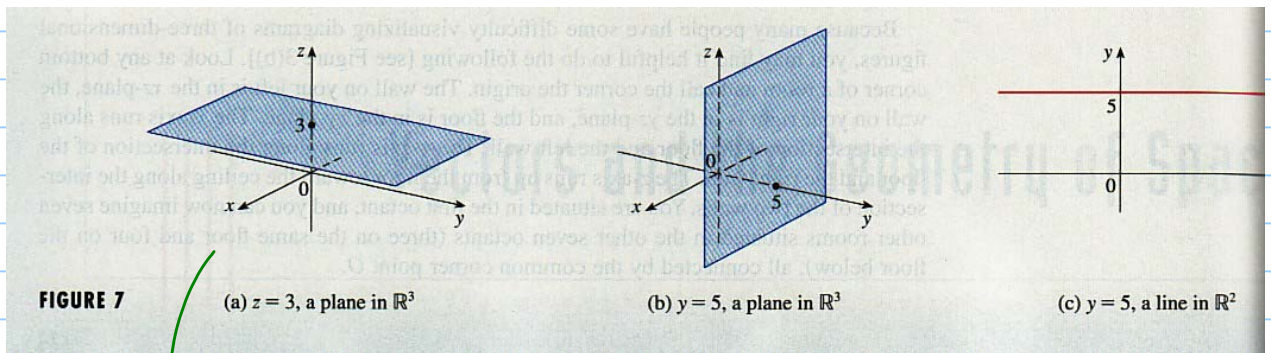
- example 1: what is the set of points whose z-coordinate
is $z = 3$?

- set notation

$S =$



- for instance $(1, 2, 3)$, $(10, -\pi, 3)$, $(0, 10^6, 3)$
are in the set S



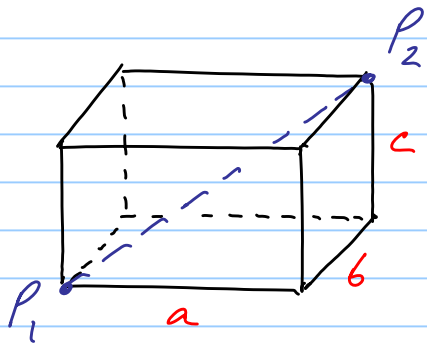
the set

- fig 7b $\{ (x, y, z) \mid \quad \}$

- fig 7c $\{ (x, y) \mid \quad \}$

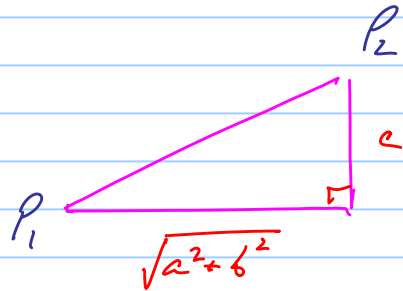
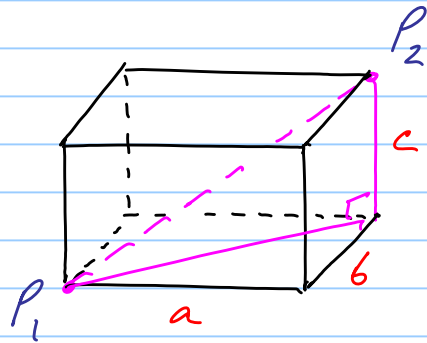
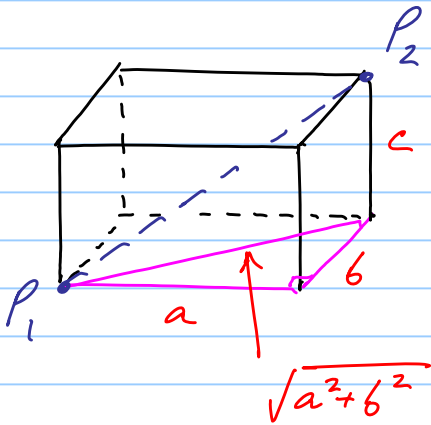
e) DISTANCE BETWEEN 2 POINTS

- WHAT IS THE LENGTH OF THE DIAGONAL OF A
3D RECTANGULAR BOX ?



$$|P_1 P_2| =$$

by



$$|P_1 P_2| = \sqrt{\quad} =$$

- 2 points in \mathbb{R}^3 define the opposite corners
of a rectangular box

$$P_1 = (x_1, y_1, z_1)$$

$$P_2 = (x_2, y_2, z_2)$$

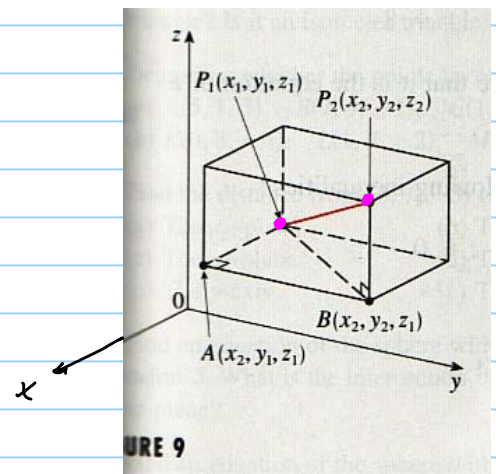
$$\text{side in } x\text{-direction} = |P_1 A|$$

=

$$\text{and } |AB| =$$

$$|BP_2| =$$

$$|P_1 P_2| = \sqrt{}$$
$$= \sqrt{}$$



- WHAT IS THE SET OF POINTS WHOSE

DISTANCE FROM $C = (h, k, l)$ IS r ($r > 0$)?

a) $S = \{ (x, y, z) \mid \quad \quad \quad \}$

OR $S = \{ (x, y, z) \mid \quad \quad \quad \}$

b)

equation for a
sphere in $\mathbb{R}^3 \rightarrow$

- read examples 5 & 6 (p796)

IDEA SUMMARY

- ordered triple as coordinates of a point in \mathbb{R}^3
- sets of points & equations of surfaces
- distance between 2 points via Pythagoras