

Notes 13.1

Monday, June 25, 2007
1:23 PM

UCLA Covell Math/Science

Tutorials - Math 32A Chem, LS, Physics

Free to all UCLA undergrads

Sign-ups Wed, Thurs this week 12-3pm

Covell 2nd floor first come first serve

- Prof: Alex Boisvert (Bwah-vair)

- Syllabus

- HW



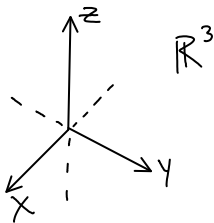
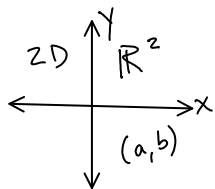
Name -
Section# - section 1A

• solutions online

• username: math32a

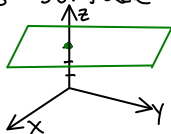
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• 3-D coordinate systems

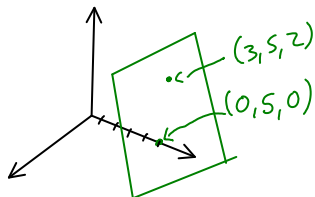


- in $\mathbb{R}^2$ an equation involving x & y is a curve.
- in $\mathbb{R}^3$ an equation involving $x, y,$ & z is a surface

Ex what is surface defined by $z=3$



Ex what is surface defined by $y=5$



• Distance Formula

- In $\mathbb{R}^2$ $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

- In $\mathbb{R}^3$ $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$

Ex Find distance between $(2, -1, 7)$ and $(1, -3, 5)$

$$d = \sqrt{(2-1)^2 + (-1-(-3))^2 + (7-5)^2} \\ = \sqrt{1+4+4} = 3$$

Ex Take any point $C \in \mathbb{R}^3$
 Take r when $r > 0$
 What is set of all points at distance r from C
 A sphere

- Equation of a sphere

$C(h, k, l)$

any point (x, y, z) on the sphere is distance r from C

$$r = \sqrt{(x-h)^2 + (y-k)^2 + (z-l)^2} = r$$

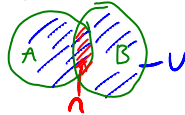
$$r^2 = (x-h)^2 + (y-k)^2 + (z-l)^2$$

*in particular if the center of the sphere is $O(0,0,0)$
 then $r^2 = x^2 + y^2 + z^2 = r^2$

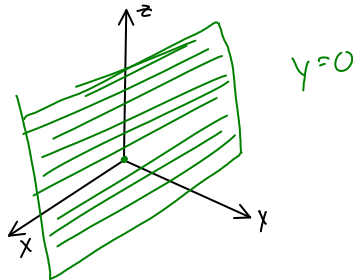
Ex Find the equation of the sphere with center $(1, -4, 3)$ and radius 5.
 $(x-1)^2 + (y+4)^2 + (z-3)^2 = 25$

What is the intersection with this sphere at xz plane?

* Intersection $\cap$
 Union $\cup$



Q what is xz plane?



Sphere $(x-1)^2 + (y+4)^2 + (z-3)^2 = 25$ plane $y=0$
 $(x-1)^2 + (0+4)^2 + (z-3)^2 = 25$
 $(x-1)^2 + (z-3)^2 = 9$

