

$$A(2, 3, -1)$$

$$B(6, 1, -2)$$

Find AB.

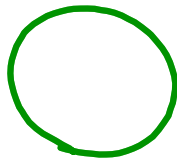
$$\begin{aligned} AB &= \sqrt{4^2 + 2^2 + 1^2} \\ &= \sqrt{21} \end{aligned}$$

$$d_2 = \sqrt{\Delta x^2 + \Delta y^2}$$

$$d_3 = \sqrt{\Delta x^2 + \Delta y^2 + \Delta z^2}$$

$$x^2 + y^2 + z^2 = 1$$

describe ↗



→ sphere

centered at  
(0, 0, 0)

$$r = 1.$$

$$d = \sqrt{(x-0)^2 + (y-0)^2 + (z-0)^2}$$

$$(x-2)^2 + (y+1)^2 + (z+7)^2 \leq 9$$

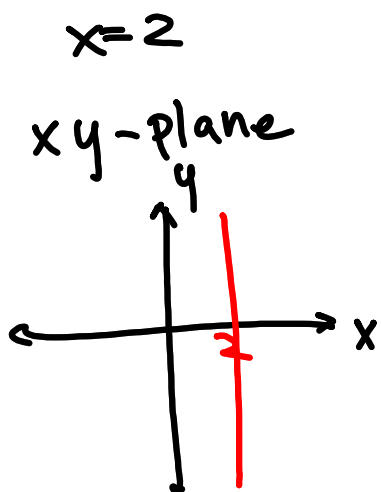
1) Describe

$$C: (2, -1, -7)$$

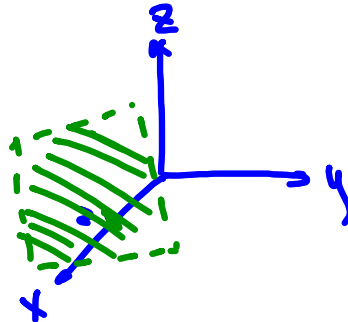
$$r: 3$$

2) describe

space enclosed  
by sphere w/  $C(2, -1, -7)$   
 $r: 3$

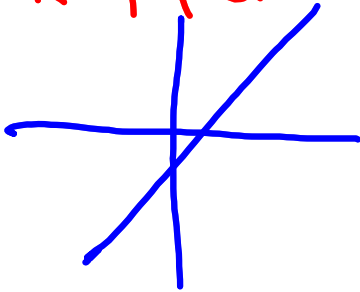


plane // yz plane  
2 units in x-axis.  
xyz-space

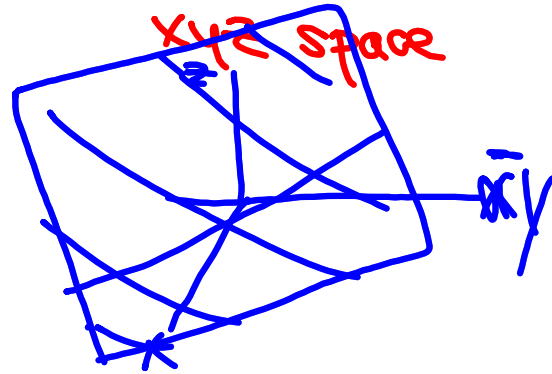


$$y = 2x - 1$$

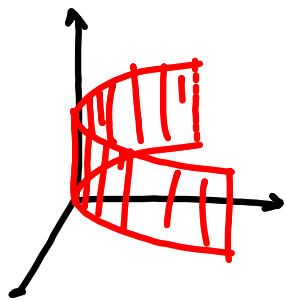
x-y plane



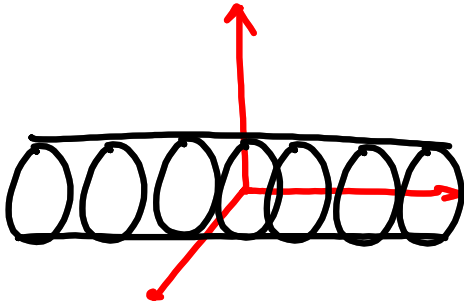
xyz space



$$y = x^2 \text{ in } xyz \text{ space.}$$



$$x^2 + z^2 = 4$$



### Vector

- direction
- magnitude

$$\vec{v} = \langle a, b, c \rangle$$

$$\text{mag. of } \vec{v} = |\vec{v}| = \sqrt{a^2 + b^2 + c^2}$$

unit vector.  
mag of 1

$$\frac{\vec{v}}{|\vec{v}|} = U\vec{v}$$

A (2, 5, -2)

$$\vec{AB} = \langle 4, -4, 7 \rangle$$

$$\vec{BA} = \langle -4, 4, -7 \rangle$$

B (6, 1, 5)

$\vec{v}_1 = -\vec{v}_2 \Rightarrow$  they  
are directing  
opp. but have  
same mag.