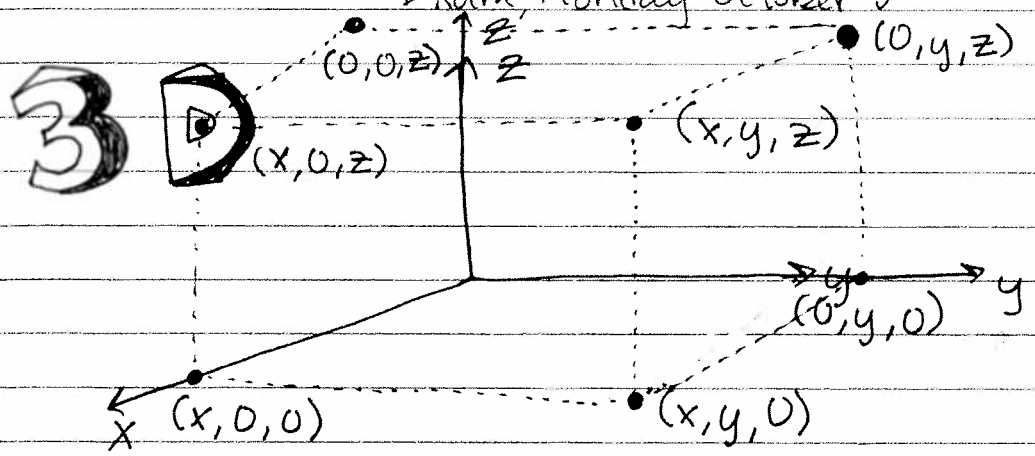
Caitlin C wonders what color a Smurf turns if you strangle it.

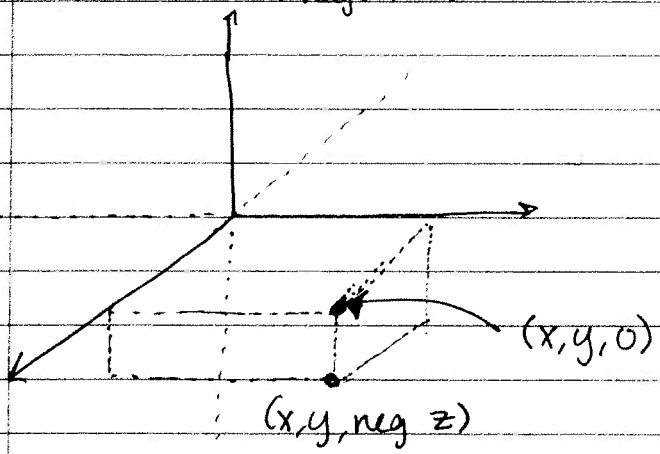
9/21/09

Outline
- 3D
- Vectors

Announcements
- T 9/22 BNW 254 4-5:30 Snacks + Math Grad School Info Panel
- Exam, Monday October 5th



J: what about negatives?

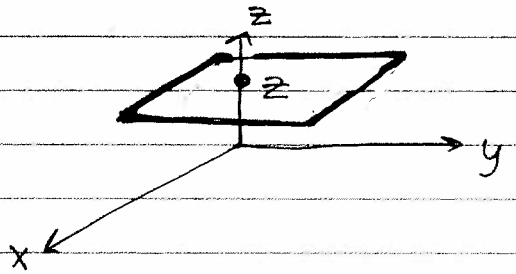


Various graphical objects

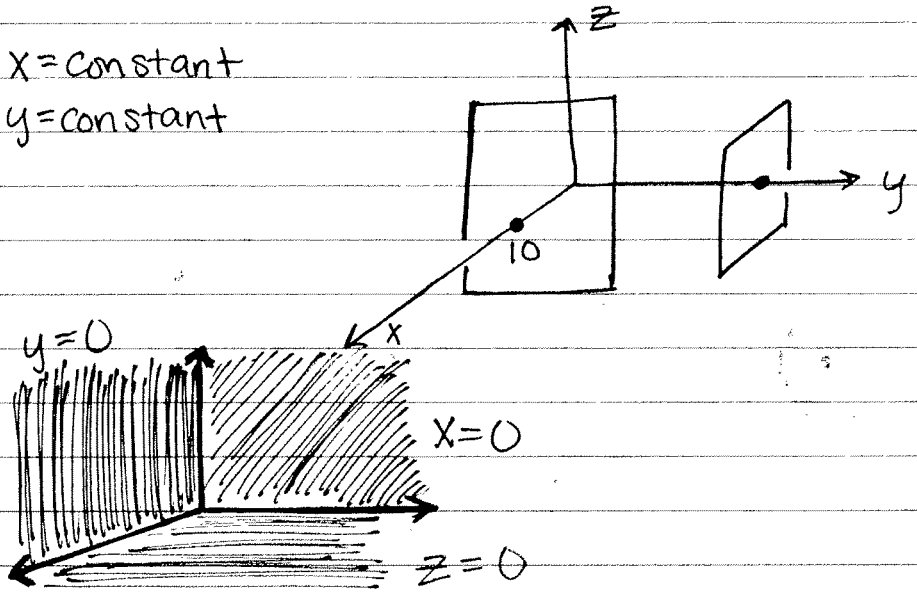
- Planes

In general: $ax + by + cz = d$

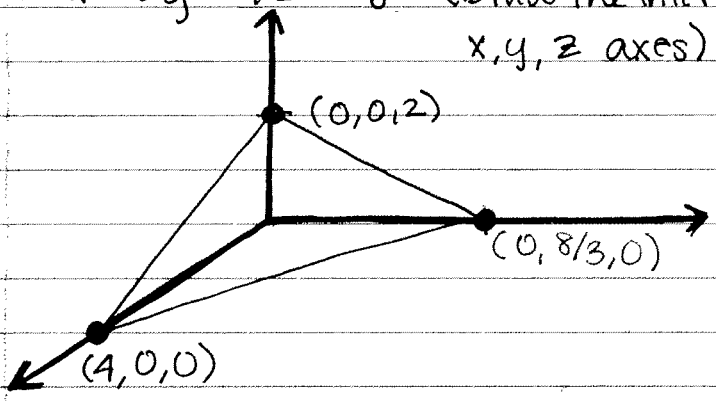
Ex. $b = a = 0$
then $z = d/c$
horizontal planes



x = constant
y = constant



$2x+3y+4z=8$ (Draw the intersection of this plane w/ the x, y, z axes)

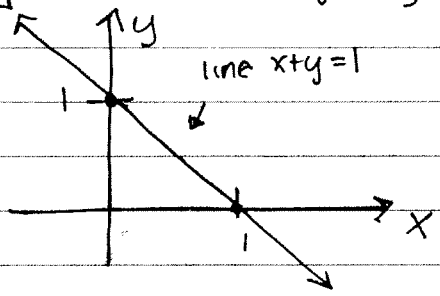


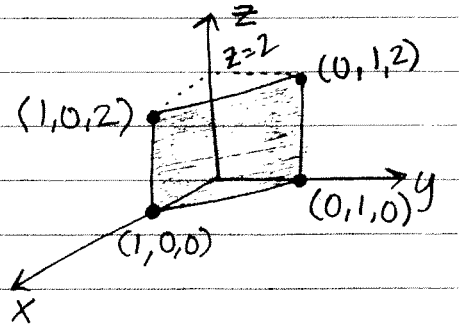
when y and z = 0,
$2x = 8$

when $x=0=y$
$z=2$

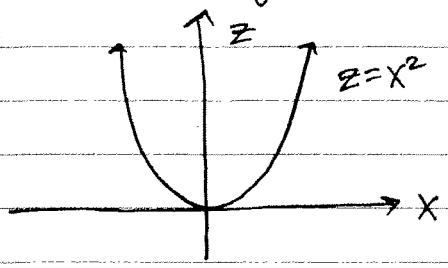
when $x=0=z$
$y = 8/3$

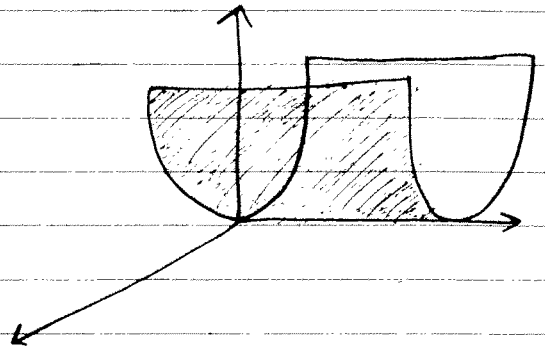
$x+y=1$ z can be anything





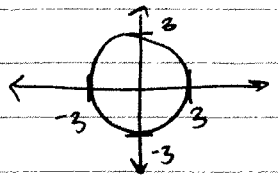
$z = x^2$ y can be anything

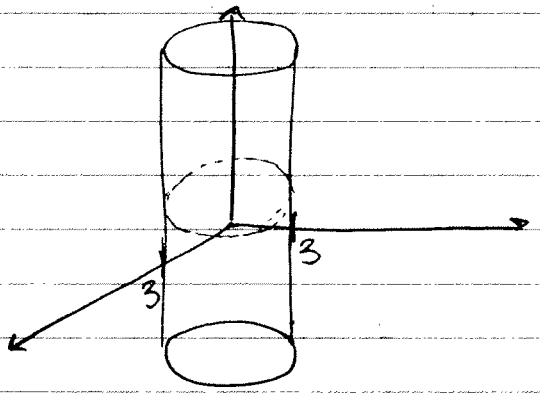




Positive y axis points into the board

$x^2 + y^2 = 9$





13.1 p805 #7

7. Find the lengths of the sides of the triangle PQR. Is it a right triangle? Is it an isosceles triangle?

P(3, -2, -3), Q(7, 0, 1), R(1, 2, 1)

FORMULA → $|PQ| = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2}$

$|PQ| = \sqrt{(3-7)^2 + (-2-0)^2 + (-3-1)^2}$

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

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

$= \sqrt{36}$

$|PQ| = 6$

$|QR| = \sqrt{(7-1)^2 + (0-2)^2 + (1-1)^2}$

$= \sqrt{(6)^2 + (-2)^2 + (0)^2}$

$= \sqrt{36 + 4 + 0}$

$= \sqrt{40}$

$|QR| = 2\sqrt{10}$

$|PR| = \sqrt{(3-1)^2 + (-2-2)^2 + (-3-1)^2}$

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

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

$= \sqrt{36}$

$|PR| = 6$

$|PQ| = 6$

$|QR| = 2\sqrt{10}$

$|PR| = 6$

$|PQ| = 6 = |PR|$

$\triangle PQR$ is an isosceles triangle