GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter:
Date:	Writer/Prep:
Topics:	QC/Leader:

Instructions: #1

Calc 3 is study of Change in multiple dimensions

My major is changing all the time, and depends on many factors

GROUP NAME: Dough Makers Logo:	Student Names (First and Last) Speaker/Presenter: Brian Bagels
Date: Topics:	Writer/Prep: Alana J QC/Leader: Pat Simon

Instructions: #2 Test 1

Given the points A(2,0,0), B(−2,0,1), and C(−1,2,0)

a) Find the angle between $\overrightarrow{BC}$ and $\overrightarrow{AC}$

$\overrightarrow{BC} = \langle 1,2,-1 \rangle = \vec{v}$

$\overrightarrow{AC} = \langle -4,2,-2 \rangle = \vec{w}$

$$\cos^{-1}\left(\frac{\vec{v}\cdot\vec{w}}{\|\vec{v}\|\,\|\vec{w}\|}\right) = \cos^{-1}\left(\frac{-4+4+2}{\sqrt{1^2+2^2+1^2}\cdot\sqrt{4^2+2^2+2^2}}\right) = \theta$$

$$= 80.4^\circ$$

b) Parametric equations of line containing $\overrightarrow{AB}$

$\langle x,y,z \rangle = \langle x_1,y_1,z_1 \rangle + t\langle x_2,y_2,z_2 \rangle$ (point + t(vector))

$\overrightarrow{BC} = \langle 5,0,1 \rangle$

$\langle x,y,z \rangle = \langle -2,0,1 \rangle + t\langle -5,0,-1 \rangle$

$x = 5t - 2$

$y = 0$

$z = t + 1$

GROUP NAME: Mech engineers	Student Names (First and Last)
Logo:	Speaker/Presenter:
Date: 3/27/13	Writer/Prep: Nick Chiavoni
Topics:	QC/Leader: Renzo Chanpanaqui

#3

Instructions: Given the points A(3,0,2), B(-2,0,1), and C(-1,2,0)
a) Find the equation of the plane containing A, B, and C
b) Draw a graph of the plane when x, y, and z are all positive

$\vec{AB} = \langle -5, 0, -1 \rangle$ $\vec{AC} = \langle -4, 2, -2 \rangle$

a) $\vec{n} = \vec{AB} \times \vec{AC} = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ -5 & 0 & -1 \\ -4 & 2 & -2 \end{vmatrix} = \vec{i}(0-(-2)) - \vec{j}(-5(-2)-(-1)(-4)) + \vec{k}(5(2)-0)$

A, B, C

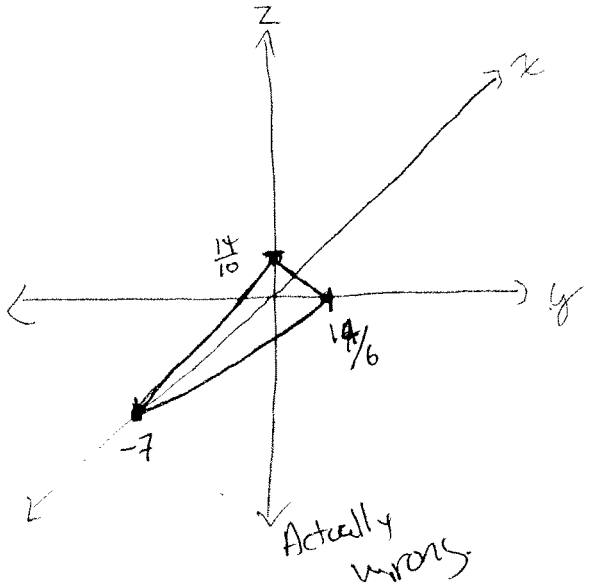
$\vec{n} = \langle 2, -6, -10 \rangle$

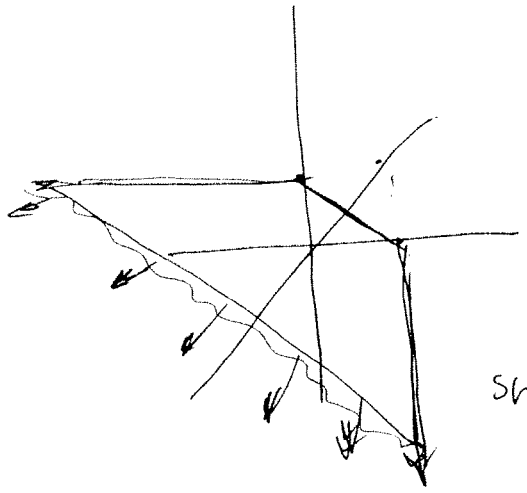
$A(x-x_0) + B(y-y_0) + C(z-z_0) = 0$

$2(x-3) - 6(y-0) + (-10)(z-2) = 0$

$2x - 6y - 10z = -14$

b)





Should be

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter:
Date:	Writer/Prep:
Topics:	QC/Leader:

Instructions:

#4

Given $A(3,0,2)$ $B(-2,0,1)$ $C(-1,2,0)$

is $(1,-2,9)$ on Plane?

$2x - 6y - 10z = -14$

$2(1) - 6(-2) - 10(9) \neq -14$

Not on plane.

Distance $(1,3,0)$

$$\frac{|Ax_1 + By_1 + Cz_1 + D|}{\sqrt{A^2 + B^2 + C^2}} = \frac{|(2)(1) + (-6)(3) + (-10)(0) + (-14)|}{\sqrt{4 + 36 + 100}}$$

$$= \frac{2 - 18 - 14}{\sqrt{140}}$$

$$= \frac{-30}{\sqrt{140}}$$

GROUP NAME:	Student Names (First and Last)
Logo:	Speaker/Presenter: _____
Date:_____	Writer/Prep:_____
Topics:	QC/Leader:_____

Instructions:

#5

A) $x^2 - y^2 - z^2 = 1$ Hyperb. 2 Sheets

B) $x^2 - y^2 - z^2 = 0$ Elliptic Cone

C) $x^2 - y^2 - z^2 = 1$ Hyperbolic Paraboloid.

Parabola Up
Parabola Down $\Rightarrow$

GROUP NAME: Engees	Student Names (First and Last)
Logo:	Speaker/Presenter: Brandon
Date: 3/27	Writer/Prep: Felipe
Topics:	QC/Leader:

Instructions: # 6

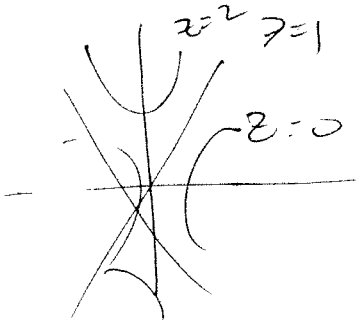
$x^2 - y^2 + z^2 = 1 \Rightarrow$ one-sheeted Hyperboloid

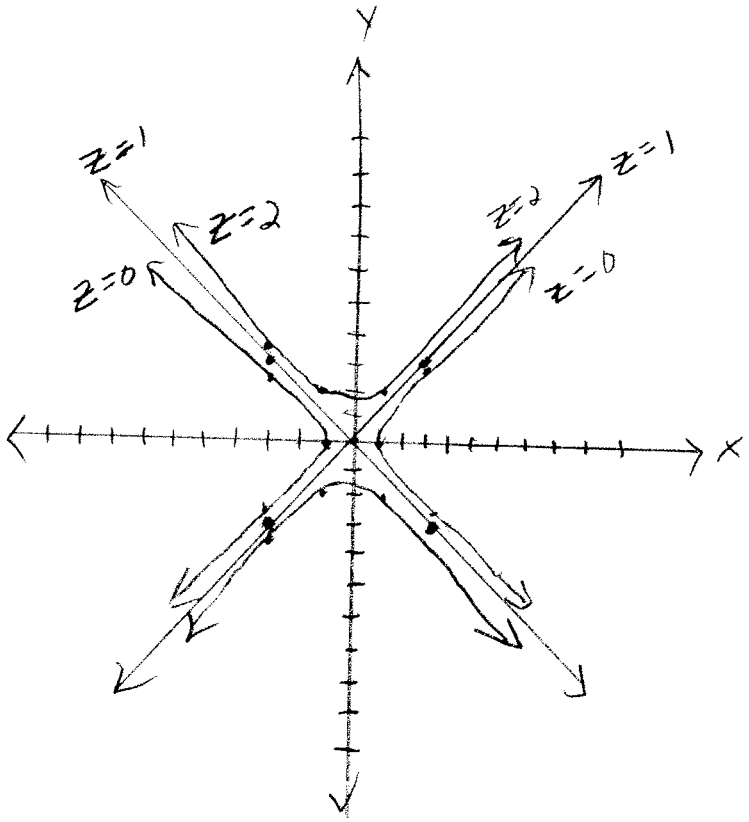
$z=0: \quad y^2 = x^2 - 1$

$y = \pm\sqrt{x^2-1}$

$z=1: \quad y = \pm x$

$z=2: \quad y = \pm\sqrt{x^2+3}$





GROUP NAME: SEBS	Student Names (First and Last)
Logo:	Speaker/Presenter: William E. Carter, Jr.
Date:	Writer/Prep: ZAHIN FARZANA
Topics:	QC/Leader: Eric Zhuang

Instructions: Find $r(t)$ if $r'(t) = (1/t)\vec{i} + (1-t)\vec{j} + t\vec{k}$

#7 $\vec{r}(0) = 3\vec{i} + \vec{j}$

$$\vec{r}'(t) = (1/t)\vec{i} + (1-t)\vec{j} + t\vec{k}$$

$$\Rightarrow \vec{r}(t) = \ln t\ \vec{i} + \left(t - \frac{t^2}{2}\right)\vec{j} + \frac{t^2}{2}\vec{k} + C$$

$$\vec{r}(0) = \ln 0\ \vec{i} + 0\cdot\vec{j} + 0\cdot\vec{k} + C = 3\vec{i} + \vec{j}$$

undefined

$\therefore C = 3\vec{i} + \vec{j}$

$\langle 0, 1, 1\rangle + \langle c_1, c_2, c_3\rangle = \langle 3, 1, 0\rangle$

$\langle 3 \quad 0 \quad -1\rangle$

$$\vec{r}(t) = (\ln t)\vec{i} + \left(t - \frac{t^2}{2}\right)\vec{j} + \frac{t^2}{2}\vec{k} + 3\vec{i} + \vec{j}$$

$$= (\ln t + 3)\vec{i} + \left(t - \frac{t^2}{2} + 0\right)\vec{j} + \frac{t^2}{2} - 1\vec{k}$$

GROUP NAME: i Derive Logo:	Student Names (First and Last) Speaker/Presenter: Kate M.
Date: 3/27/13 Topics:	Writer/Prep: Joanna P. QC/Leader: Both

Instructions: What is the length of the curve $r(t) = \langle 2t+1, 0, t \rangle$ over the interval $[0,3]$?

#8) Arc length Formula

$r'(t) = \langle 2, 0, 1 \rangle$

$$S = \int_0^3 \left| \sqrt{(x')^2 + (y')^2 + (z')^2} \right| dt$$

$$S = \int_0^3 \left| \sqrt{(2)^2 + (0)^2 + (1)^2} \right| dt$$

$(4 + 0 + 1)$

$$S = \int_0^3 \left| \sqrt{5} \right| dt$$

$$S = \sqrt{(5)}t \Big|_0^3 = 3\sqrt{5}$$

Calc 7 : $\int f(x)\,dx$

Start : 0

Finish : 3

$$\int f(a)\,dx = \int_0^3 1\,dt = 3$$

$$= \int_0^3 \sqrt{5}\,dt$$

Length = 6.708...

GROUP NAME: Math Whiz Logo: + − ÷ ×	Student Names (First and Last) Speaker/Presenter:
Date: 3-27-13 Topics: Sec. 1 Review.	Writer/Prep: Joe Huppenthal QC/Leader: Michael McNulty

Instructions: #9 on Take-home Test

$\vec{r}(t) = \langle t, 1-t, \cos t \rangle$

a) acceleration at $t = 0$

$\vec{r}'(t) = \vec{v}(t) = \langle 1, -1, -\sin t \rangle$

$\vec{r}''(t) = \vec{a}(t) = \langle 0, 0, -\cos t \rangle$

$\vec{a}(0) = \langle 0, 0, -1 \rangle$

$\|\vec{a}(0)\| = \sqrt{(-1)^2} = \underline{1}$

b) speed at $t = 0$

$s(t) = \|v(t)\| = \|r'(t)\| = \|\langle 1, -1, -\sin t \rangle\|$

$s(0) = \sqrt{1^2 + (-1)^2 + (-\sin 0)^2} = \underline{\sqrt{2}}$

GROUP NAME: Engineers Logo: X	Student Names (First and Last) Speaker/Presenter: Kyle Carlson
Date: Topics:	Writer/Prep: QC/Leader:
Instructions:	

$Z = (1,2,3)$
$Y = (3,10,-1)$
$\vec{ZY} = (2,8,-4)$

$E = (-2,4,3)$
$D = (5,8,7)$
$\vec{ED} = (8,4,4)$

$f(t) = \langle 1,2,3\rangle + t\langle 2,8,-4\rangle$ $g(t) = (-2,4,3) + t(8,4,4)$

$f(t) = (1,2,3) + t(2,8,-4)$ $g(t) = \langle -2,4,3\rangle + t(8,4,4)$

$f(t) = (1+2t, 2+8t, 3-4t)$ $g(t) = (-2+8t, 4+4t, 3+4t)$

$x = 1+2t$ $x = -2+8t$
$y = 2+8t$ $y = 4+4t$
$z = 3-4t$ $z = 3+4t$

$1+2t = -2+8t$
$3 = 6t$
$t = \frac{1}{2}$

$2+8(\frac{1}{2}) = 4+4(\frac{1}{2})$
$3+4(\frac{1}{2}) = 3+4(\frac{1}{2})$

The x and y will be the same at the same time, but their z is different