

Section: MATH 2017 FALL 2014 (Porter, Richard)
 Report created: 09/04/2014 7:41 PM EDT
 Assignment: Quiz Week 1
 Students submitted: 19

Show first, last and best assignment attempts
 Exclude attempts submitted after due date
 Show percentages

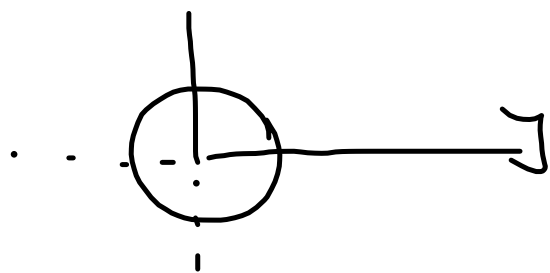
Click a question to preview it. Expand a question to view student scores.

Questions	First assignment attempt	Last assignment attempt	Best assignment attempt
+ Sec. Ex. 13 - 10.1 Section Exercise 13	89.47%	89.47%	89.47%
+ Sec. Ex. 25 - 10.1 Section Exercise 25	78.95%	78.95%	78.95%
+ Sec. Ex. 55 - 10.1 Section Exercise 55	94.74%	94.74%	94.74%
+ Sec. Ex. 25 - 10.2 Section Exercise 25	89.47%	89.47%	89.47%
+ Sec. Ex. 23 - 10.4 Section Exercise 23	57.89%	57.89%	57.89%
+ Example 6 - 10.3 Example 6	84.21%	84.21%	84.21%
+ Sec. Ex. 2 - 10.3 Section Exercise 2	100.00%	100.00%	100.00%
+ Example 6 - 10.4 Example 6	73.68%	73.68%	73.68%

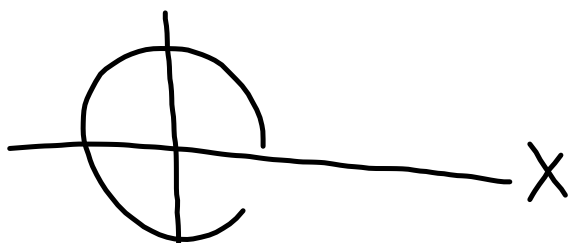
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$$x^2 + y^2 + z^2 = 1$$

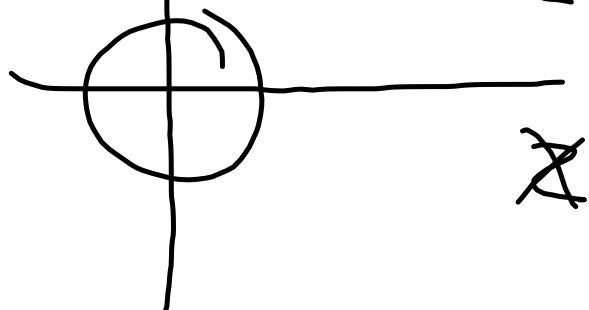
$$z \quad x=0$$

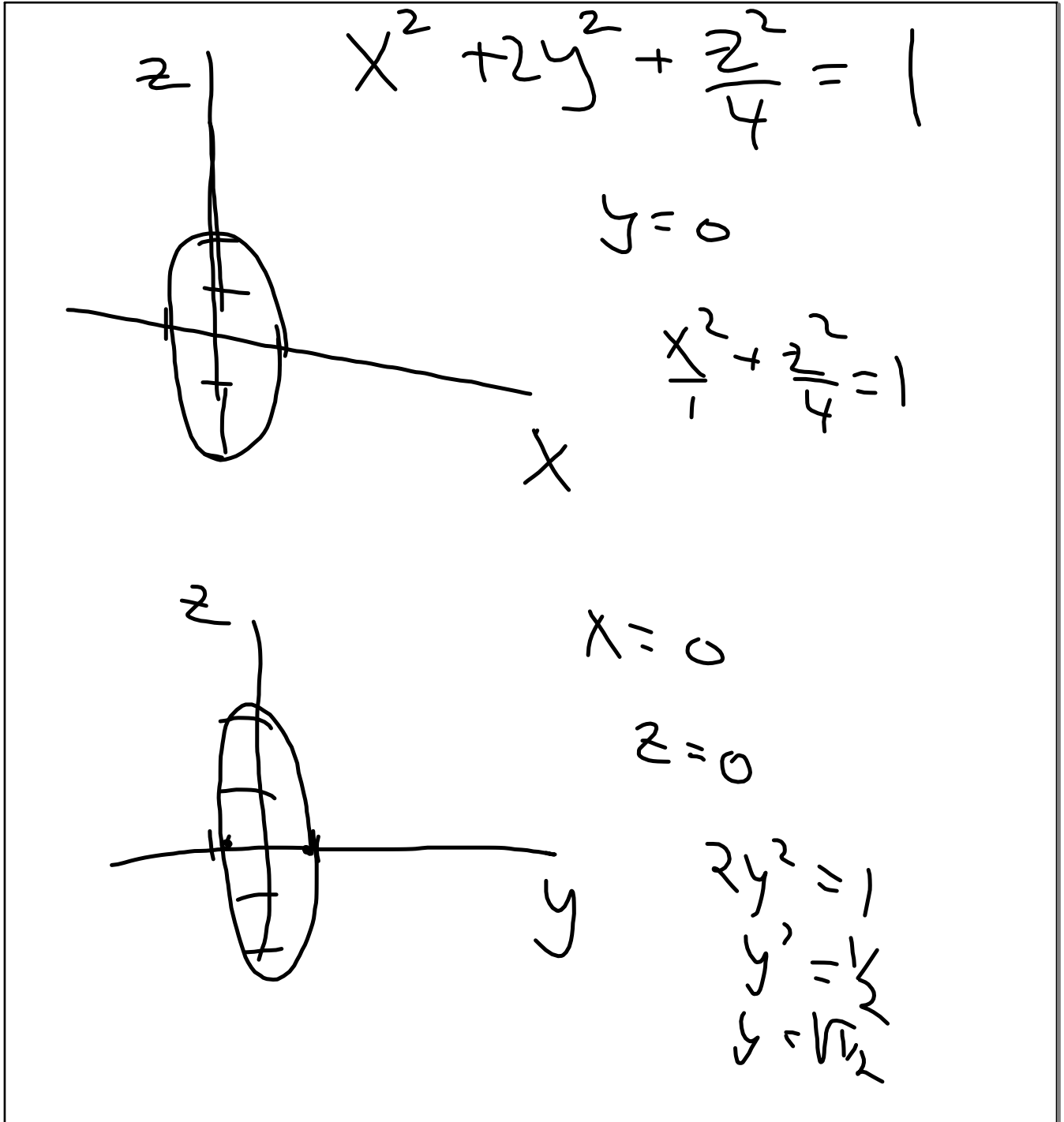


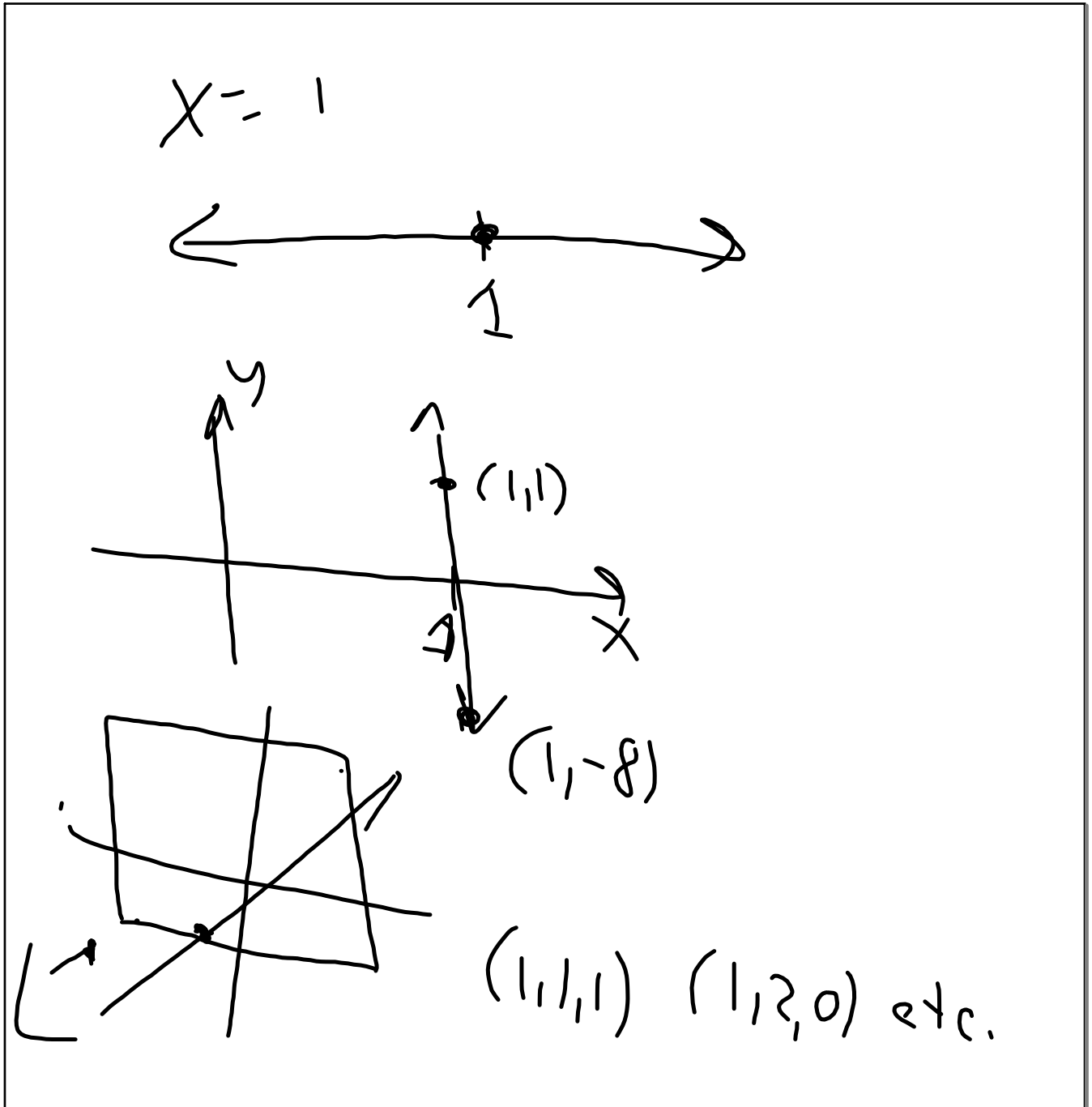
$$y=0$$



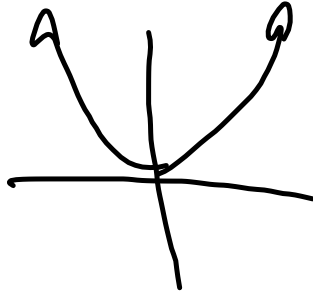
$$z=0$$



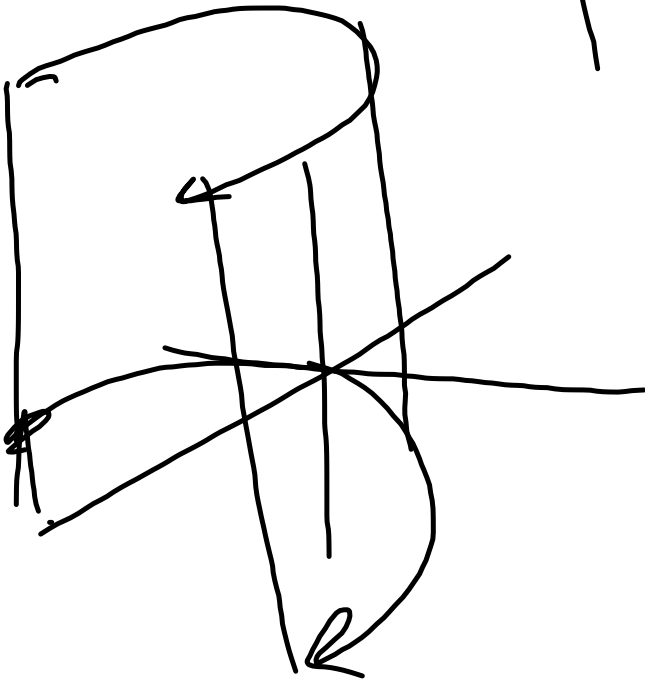




$$y = x^2$$

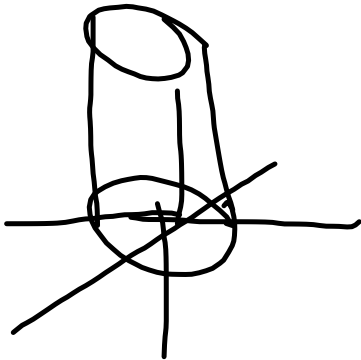


$$\begin{aligned} (0, 0) \\ (1, 1) \\ (-1, 1) \end{aligned}$$

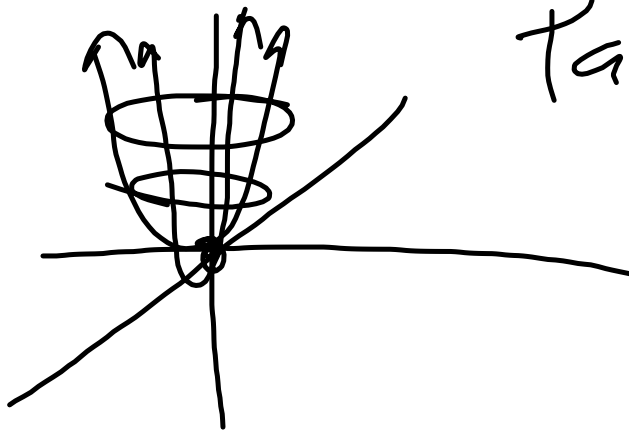


$$\begin{aligned} (0, 0, \cancel{z}) \\ (1, 1, \cancel{z}) \\ (-1, 1, \cancel{z}) \end{aligned}$$

$$x^2 + y^2 = 1 \text{ in } 3D$$



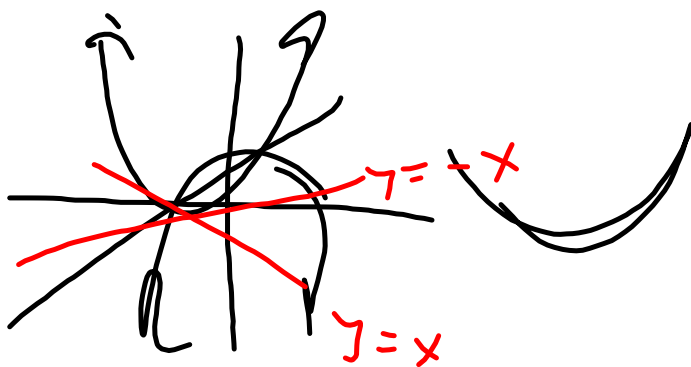
$$z = x^2 + y^2 \quad x^2 + y^2 - z = 0$$



Paraboloid

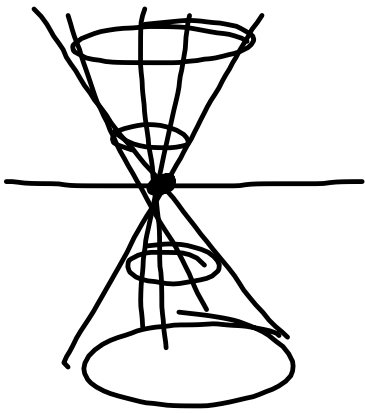
$$z = x^2 - y^2$$

Hyperbolic
Paraboloid.



$$x^2 - y^2 - z = \#$$

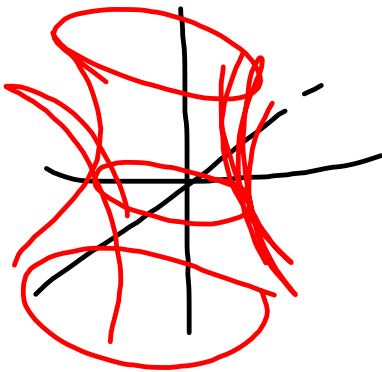
$$x^2 + y^2 = z^2$$



cone

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

Hyperboloid
1-sheet

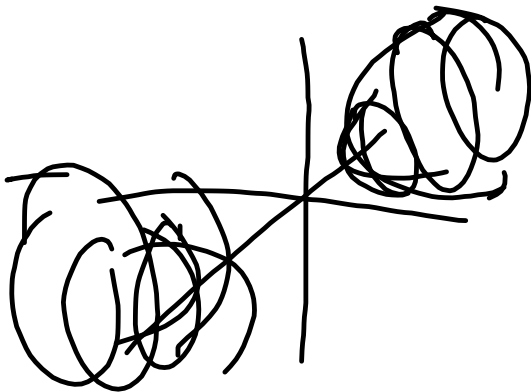


$$y=0$$

$$x^2 - z^2 = 1$$

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

hyp.
2-sheets



$$(x-1)^2 + (y-2)^2 + z^2 = 1$$

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 hyperbolic paraboloid - Bing Images
 http://www.bing.com/images/search?q=hyperbolic+paraboloid&FORM=HDRSC2

Question #6 (of 6)

6. award: 10.00 points Problems? [Adjust credit](#) for all students.

1 out of 3 attempts

Find parametric equations for the surface $z = 11 - 4x^2 - 4y^2$.

A. $z = \frac{1}{11} - s^2$, $x = \frac{1}{4} \cos t$, and $y = \frac{1}{4} \sin t$
 B. $z = 11 - s^2$, $x = \frac{1}{4} \cos t$, and $y = \frac{1}{4} \sin t$
 C. $z = \frac{1}{11} - s^2$, $x = \frac{1}{2} s \cos t$, and $y = \frac{1}{2} s \sin t$
 D. $z = 11 - s^2$, $x = \frac{1}{2} s \cos t$, and $y = \frac{1}{2} s \sin t$

$x = \cos t - 4\left(\frac{1}{4}s^2 \cos^2 t\right) + 4\left(\frac{1}{4}s^2 \sin^2 t\right)$
 $y = \sin t$
 $x^2 + y^2 = 1(s^2) - s^2(1)$

NetCalculator

Assistance

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[View Question](#)
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[Guided Solution](#)
[Practice This Question](#)
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[Question Help](#)
[Report a Problem](#)

references

$$\cosh(x) = \frac{e^x + e^{-x}}{2}$$

$$\sinh(x) = \frac{e^x - e^{-x}}{2}$$

$$\cosh^2 x = \frac{(e^x + e^{-x})^2}{4}$$

$$\frac{e^{2x} + 1 + 1 + e^{-2x}}{4}$$

$$\sinh^2 x = \frac{e^{2x} - 1 - 1 + e^{-2x}}{4}$$

$$\cosh^2 x - \sinh^2 x = \frac{4}{4} = 1$$

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Question #6 (of 6) next

6. award: 10.00 points Problems? [Adjust credit](#) for all students.

1 out of 3 attempts

Find parametric equations for the surface $z = 11 - 4x^2 - 4y^2$.

NetCalculator

Assistance

Check My Work

View Hint

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Guided Solution

Practice This Question

Print

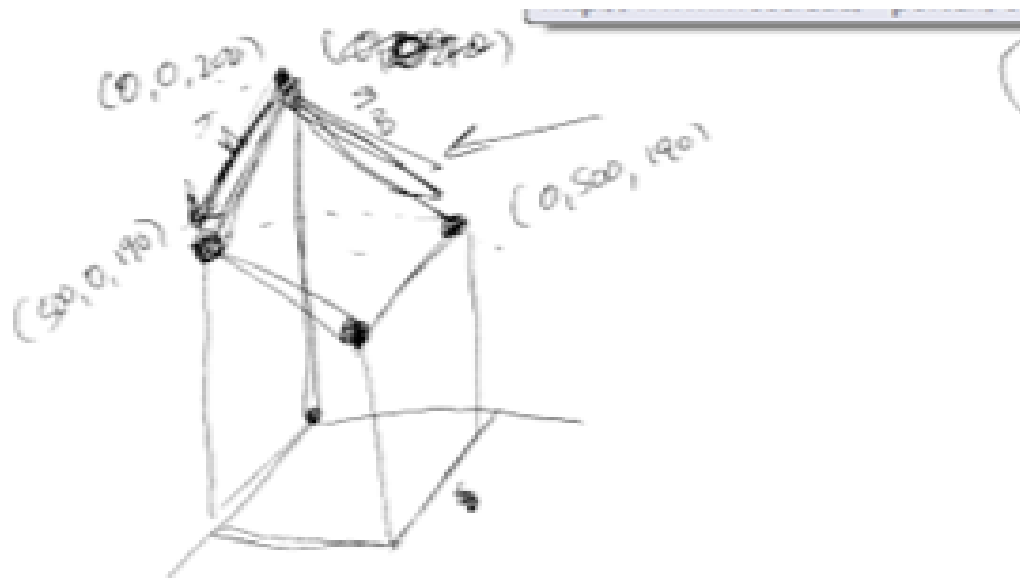
Question Help

Report a Problem

A. $z = \frac{1}{11} - s^2$, $x = \frac{1}{4} \cos t$, and $y = \frac{1}{4} \sin t$
 B. $z = 11 - s^2$, $x = \frac{1}{4} \cos t$, and $y = \frac{1}{4} \sin t$
 C. $z = \frac{1}{11} - s^2$, $x = \frac{1}{2} s \cos t$, and $y = \frac{1}{2} s \sin t$
 D. $z = 11 - s^2$, $x = \frac{1}{2} s \cos t$, and $y = \frac{1}{2} s \sin t$

$x = \cos t - 4\left(\frac{1}{4}s^2 \cos^2 t\right) + 4\left(\frac{1}{4}s^2 \sin^2 t\right)$
 $y = \sin t$
 $x^2 + y^2 = 1(s^2) - s^2(1)$

references



$$\vec{n} = \vec{A} + \vec{B} = \langle A, B, C \rangle$$

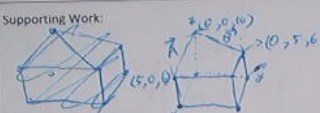
$$Ae + B_1 + C_2 = D$$

$0 \quad 0 \quad 200$

$\uparrow \quad \nearrow$
 $\vec{200C}$

$$\langle 500, 500, 190 \rangle$$

Supporting Work:



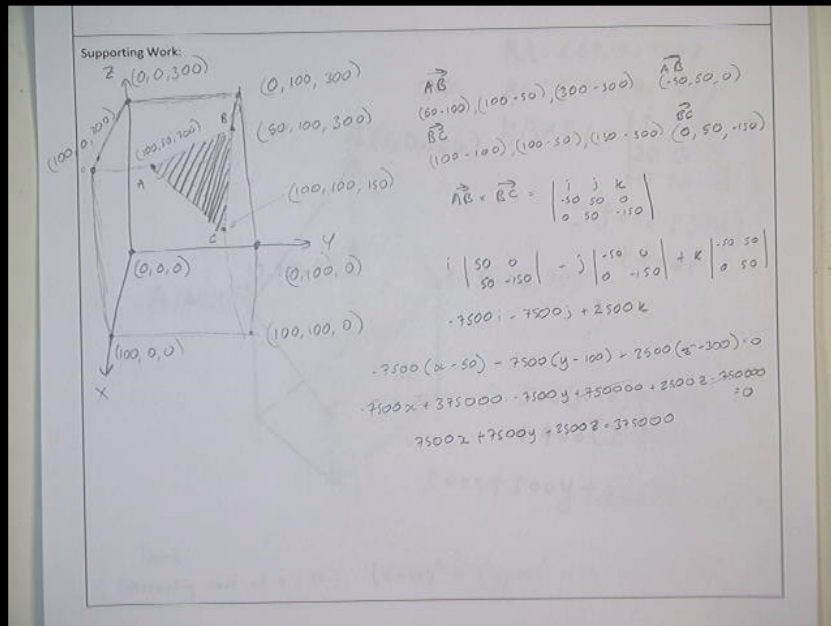
$\vec{A} = \langle 5, 0, 0 \rangle$
 $\vec{B} = \langle 0, 5, 6 \rangle$

$\vec{A} \times \vec{B}$
 $\vec{A} = \langle 5, 0, 0 \rangle$
 $\vec{B} = \langle 0, 5, 6 \rangle$

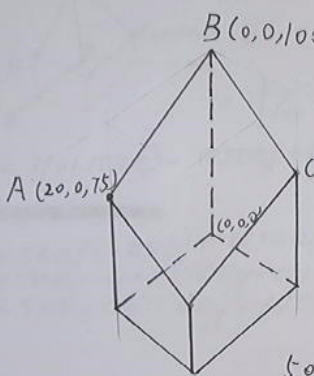
$\vec{A} \times \vec{B} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ 5 & 0 & 0 \\ 0 & 5 & 6 \end{vmatrix}$
 $= (0-0)\hat{i} - (20-0)\hat{j} + (25-0)\hat{k}$
 $= -20\hat{j} + 25\hat{k}$

$\vec{A} \times \vec{B} = \vec{n}$
 $= \langle 0, -20, 25 \rangle = \vec{n}$
 $\Rightarrow 20(x-0) - 16(y-0) - 25(z-10)$

$\vec{A} \times \vec{B} = \begin{vmatrix} 5 & 0 & 0 \\ 0 & 5 & 6 \end{vmatrix}$
 $20\hat{i} + 20\hat{j} + 25\hat{k}$
 $\vec{A} \times \vec{B} = \vec{n}$
 $\langle 20, 20, 25 \rangle = \vec{n}$
 $0 = 20(x-0) + 20(y-0) + 25(z-10)$



Supporting Work:

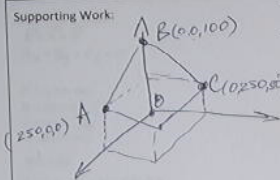


$BA: \langle 20, 0, -25 \rangle$
 $BC: \langle 0, 20, -25 \rangle$
 $BA \times BC = \begin{vmatrix} i & j & k \\ 20 & 0 & -25 \\ 0 & 20 & -25 \end{vmatrix}$
 $= 500i + 500j + 400k$

$\therefore 500(x-0) + 500(y-0) + 400(z-100) = 0$
 $500x + 500y + 400(z-100) = 0$

Dome:
 (Assuming roof at $z=75$) $(x-10)^2 + (y-10)^2 + (z-75)^2 = 100$

Supporting Work:



$B(0, 0, 100)$
 $A(250, 0, 0)$
 $C(0, 250, 50)$

$\vec{BA} = \langle 250, 0, -50 \rangle$
 $\vec{BC} = \langle 0, 250, -50 \rangle$

$\vec{BA} \times \vec{BC} = \begin{vmatrix} i & j & k \\ 250 & 0 & -50 \\ 0 & 250 & -50 \end{vmatrix} =$

$= i(0 \cdot -50 - (-50) \cdot 250) - j(250 \cdot -50 - 0 \cdot -50) + k(250 \cdot 0 - 0 \cdot 250)$

$= i(0 + 12500) + 12500j + 62500k = \langle 12500, 12500, 62500 \rangle$

\vec{n}

~~$12500(x - 0) + 12500(y - 0) + 62500(z - 100) = 0$~~
 $12500x - 0 + 12500y - 0 + 62500z - 6250000 = 0$
 $12500x + 12500y + 62500z = 6250000$

Supporting Work:

$$\vec{N} = \vec{A} \times \vec{B}$$

$$Ax + By + Cz = D$$

$A (0, 20, 20)$
 $B (20, 20, 30)$
 $C (20, 0, 20)$
 $D (0, 0, 10)$

$\vec{A} \times \vec{B}$

$$\langle 20, 0, 10 \rangle \times \langle 0, 20, 10 \rangle$$

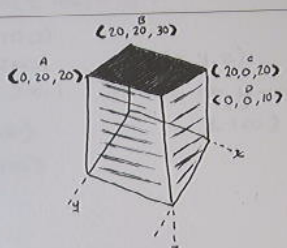
↑	↑	↑
20	0	10
0	20	10

$$\hat{i} \begin{vmatrix} 0 & 10 \\ 20 & 10 \end{vmatrix} - \hat{j} \begin{vmatrix} 20 & 10 \\ 0 & 10 \end{vmatrix} + \hat{k} \begin{vmatrix} 20 & 0 \\ 0 & 20 \end{vmatrix}$$

$$= -200\hat{i} - 200\hat{j} + 400\hat{k}$$

$\langle -200, -200, 400 \rangle$ NORMAL

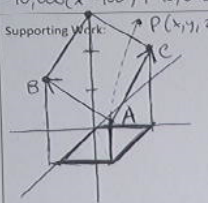
$(x, y, z) \cdot \langle -200, -200, 400 \rangle = \langle (x-20), (y-20), (z-30) \rangle \cdot \langle -200, -200, 400 \rangle$
 $-200(x-20) - 200(y-20) + 400(z-30)$
 $-200x + 4000 - 200y + 4000 + 400z - 12000 = 0$
 $-200x - 200y + 400z = 4000$
 $-x - y + 2z = 20$



the plane of the slide is

$$-10,000(x-100) + 10,000(y-100) - 10,000(z-100) = 0$$

Supporting Work:



$A = (100, 100, 100)$
 $B = (100, 0, 200)$
 $C = (0, 100, 200)$
 $P = (x, y, z)$
 $\vec{AP} = \langle x-100, y-100, z-100 \rangle$
 $\vec{AB} = \langle 0, -100, 100 \rangle$
 $\vec{AC} = \langle -100, 0, 100 \rangle$

$$\vec{AB} \times \vec{AC} = \vec{n}$$

$$\vec{n} = \begin{vmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ 0 & -100 & 100 \\ -100 & 0 & 100 \end{vmatrix} = -10,000 \mathbf{i} + 10,000 \mathbf{j} - 10,000 \mathbf{k}$$

$$\vec{n} = \langle -10,000, 10,000, -10,000 \rangle$$

$$\vec{AP} \cdot \vec{n} = -10,000(x-100) + 10,000(y-100) - 10,000(z-100) = 0$$

