← **MA2009, section GRUPO4, Fall 2019**

🎓 **INSTRUCTOR**

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## Tarea 1: Coordenadas 3D y planos (Homework)

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### Current Score

| QUESTION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POINTS | 5/5 | 2/2 | 6/6 | 4/4 | 3/3 | 3/3 | 3/3 | 1/1 | 11/11 | 1/1 | 1/1 | 2/2 | 1/ |
| | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

| TOTAL | |
|---|---|
| 47/47 | **100.0%** |

### Due Date      Past Due

**AGO. 24** 11:59 P. M.

📅 Request Extension

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### Assignment Submission & Scoring

**Assignment Submission**

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

**Assignment Scoring**

Your last submission is used for your score.

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**The due date for this assignment has passed.**

Your work can be viewed below, but no changes can be made.

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**Important!** Before you view the answer key, decide whether or not you plan to request an extension. Your Instructor may not grant you an extension if you have viewed the answer key. Automatic extensions are not granted if you have viewed the answer key.

📅 Request Extension      🔑 View Key

Find the lengths of the sides of the triangle *PQR*.

$$P(3, -2, -3), \quad Q(7, 0, 1), \quad R(9, -4, -3)$$

$$6

$|PQ| =$ [            ]

✔

$$6

$|QR| =$ [            ]

✔

$$\sqrt{40}$

$|RP| =$ [            ]

✔

Is it a right triangle?

○ Yes

◉ No

✔

Is it an isosceles triangle?

◉ Yes

○ No

✔

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Determine whether the points lie on a straight line.

(a)    $A(2, 4, 0)$,    $B(3, 6, -2)$,    $C(1, 2, 2)$

- ⦿ Yes, they do lie on a straight line.
- ◯ No, they do not.

✔

(b)    $D(0, -3, 3)$,    $E(1, 1, 2)$,    $F(3, 9, 0)$

- ⦿ Yes, they do lie on a straight line.
- ◯ No, they do not.

✔

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Find the distance from  (3, −9, 8)  to each of the following.

    (a) the *xy*-plane

$$8

    ✔

    (b) the *yz*-plane

$$3

    ✔

    (c) the *xz*-plane

$$9

    ✔

    (d) the *x*-axis

$$√145

    ✔

    (e) the *y*-axis

$$√73

    ✔

    (f) the *z*-axis

$$√90

    ✔

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**4.** **4/4 points** **Previous Answers** SCalc8 12.1.014.

Find an equation of the sphere with center $(3, -11, 4)$ and radius $5$.
$$(x-3)^2+(y+11)^2+(z-4)^2=25$$

✔

Use an equation to describe its intersection with each of the coordinate planes. (If the sphere does not intersect with the plane, enter DNE.)

intersection with $xy$-plane
$$(x-3)^2+(y+11)^2=9$$

✔

intersection with $xz$-plane
$$DNE$$

✔

intersection with $yz$-plane
$$(y+11)^2+(z-4)^2=16$$

✔

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**5.** **3/3 points** **Previous Answers** SCalc8 12.1.017.

Write the equation of the sphere in standard form.

$$x^2 + y^2 + z^2 + 6x - 6y - 2z = -3$$
$$(x+3)^2+(y-3)^2+(z-1)^2=16$$

✔

Find its center and radius.

center $(x, y, z)$ = (
$$-3,3,1$$
✔ )

radius
$$4$$

✔

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**3/3 points** **Previous Answers** SCalc8 12.1.018. ◫ **My Notes** **Ask Your Teacher**

Write the equation of the sphere in standard form.

$$x^2 + y^2 + z^2 + 10x - 4y + 4z + 24 = 0$$

$$(x+5)^2+(y-2)^2+(z+2)^2=9$$

[input box]

✔

Find its center and radius.

center (x, y, z) = (   $-5,2,-2$  [input box] ✔ )

radius   $3$  [input box]

✔

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**3/3 points** **Previous Answers** SCalc8 12.1.023. ◫ **My Notes** **Ask Your Teacher**

Find equations of the spheres with center $(2, -1, 4)$ that touch the following planes.

(a)   xy-plane

$$(x-2)^2+(y+1)^2+(z-4)^2=16$$

[input box]

✔

(b)   yz-plane

$$(x-2)^2+(y+1)^2+(z-4)^2=4$$

[input box]

✔

(c)   xz-plane

$$(x-2)^2+(y+1)^2+(z-4)^2=1$$

[input box]

✔

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Find an equation of the largest sphere with center ($7$, $2$, $9$) that is contained in the first octant.

$$(x-7)^2+(y-2)^2+(z-9)^2=4$$

✔

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Determine whether each statement is true or false in $\mathbb{R}^3$.

(a) Two lines parallel to a third line are parallel.

- ● True
- ○ False

✔

(b) Two lines perpendicular to a third line are parallel.

- ○ True
- ● False

✔

(c) Two planes parallel to a third plane are parallel.

- ● True
- ○ False

✔

(d) Two planes perpendicular to a third plane are parallel.

- ○ True
- ● False

✔

(e) Two lines parallel to a plane are parallel.

- ○ True
- ● False

✔

(f) Two lines perpendicular to a plane are parallel.

- ● True
- ○ False

✔

(g) Two planes parallel to a line are parallel.

- ○ True
- ● False

✔

(h) Two planes perpendicular to a line are parallel.

○ True

○ False

✔

(i) Two planes either intersect or are parallel.

● True

○ False

✔

(j) Two lines either intersect or are parallel.

○ True

● False

✔

(k) A plane and a line either intersect or are parallel.

● True

○ False

✔

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10. **1/1 points** **Previous Answers** SCalc8 12.5.040. 🗋 **My Notes** **Ask Your Teacher**

Find an equation of the plane.

The plane that passes through the line of intersection of the planes $x - z = 1$ and $y + 4z = 2$ and is perpendicular to the plane $x + y - 4z = 3$
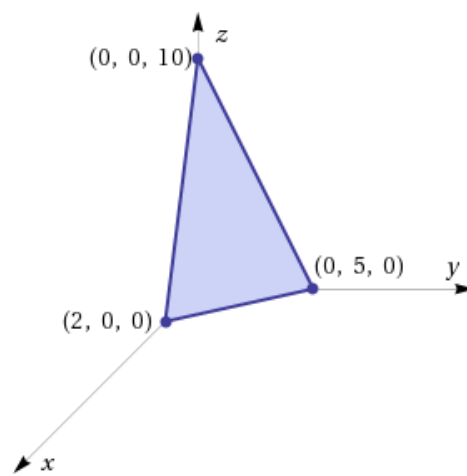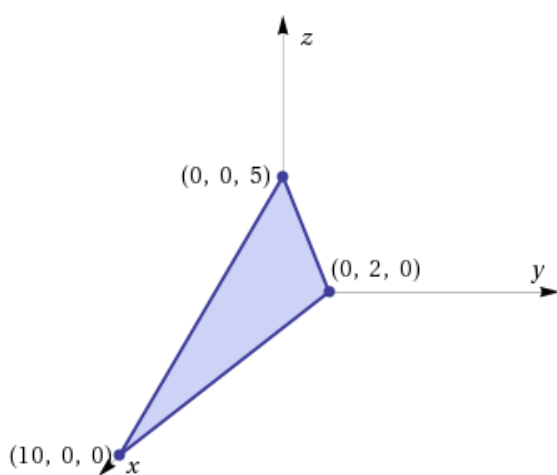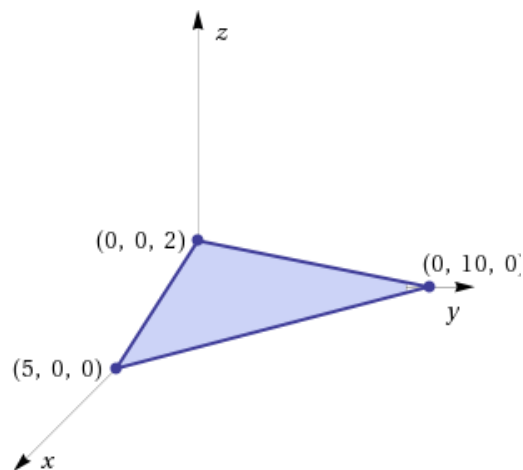
$$3x+y+z=5$$

✔

Need Help? [Talk to a Tutor]

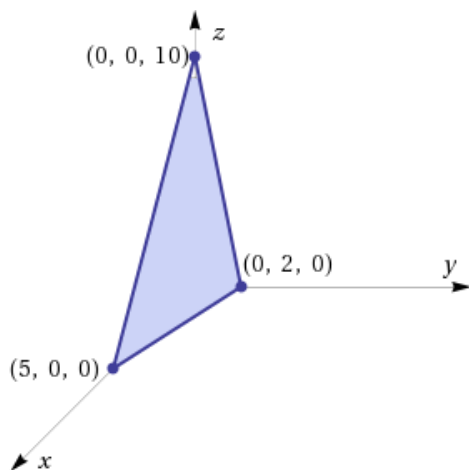Use intercepts to help sketch the plane.

$2x + 5y + z = 10$



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Determine whether the planes are parallel, perpendicular, or neither.

$$4x + 16y - 12z = 1, \quad -6x + 12y + 14z = 0$$

- ○ parallel
- ● perpendicular
- ○ neither

✔

If neither, find the angle between them. (If the planes are parallel or perpendicular, enter PARALLEL or PERPENDICULAR, respectively.)

$$PERPENDICULAR

✔ °

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Find an equation for the plane consisting of all points that are equidistant from the points $(-5, 3, 1)$ and $(1, 5, 5)$.

$$3x+y+2z=4

✔

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Find an equation of the plane with $x$-intercept $a$, $y$-intercept $b$, and $z$-intercept $c$.

$$xa+yb+zc=1

✔

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**15.**     **1/1 points**    **Previous Answers**    SCalc8 12.5.504.XP.       🗋 **My Notes**     **Ask Your Teacher**

Find an equation of the plane.

The plane through the origin and the points $(1, -2, 6)$ and $(8, 1, 2)$

$$-10x+46y+17z=0$$

✔

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**16.**     **1/1 points**    **Previous Answers**    SCalc8 12.5.505.XP.       🗋 **My Notes**     **Ask Your Teacher**

Find an equation of the plane.

The plane through the points $(2, -1, 3)$, $(6, 3, 6)$, and $(-3, -2, -3)$

$$-21x+9y+16z=-3$$

✔

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**17.**     **1/1 points**    **Previous Answers**    SCalc8 12.5.509.XP.       🗋 **My Notes**     **Ask Your Teacher**

Find an equation of the plane.

The plane that passes through the point $(-2, 1, 2)$ and contains the line of intersection of the planes
$x + y - z = 3$ and $3x - y + 4z = 3$

$$-8x+4y-13z=-6$$

✔

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