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HW2-Due Jan 21 2009 M281 (526893)

About this Assignment

Due: **Wed Jan 21 2009 08:00 PST**

1. SCalc5 13.4.010. [292215] [Show Details](#)

You are given the following.



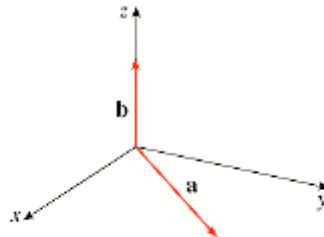
Find $|\mathbf{u} \times \mathbf{v}|$.

Determine whether $\mathbf{u} \times \mathbf{v}$ is directed into the computer screen or out of the computer screen.

- into the computer screen
- out of the computer screen

2. SCalc5 13.4.012. [292190] [Show Details](#)

The figure shows a vector \mathbf{a} in the xy -plane and a vector \mathbf{b} in the direction of \mathbf{k} . Their lengths are $|\mathbf{a}| = 3$ and $|\mathbf{b}| = 2$.



(a) Find $|\mathbf{a} \times \mathbf{b}|$.

(b) Use the right-hand rule to decide whether the components of $\mathbf{a} \times \mathbf{b}$ are

positive, negative, or 0.

The x-component is .

The y-component is .

The z-component is .

3. SCalc5 13.4.024. [292185] [Show Details](#)

Find the area of the parallelogram with vertices $K(1, 2, 3)$, $L(1, 3, 6)$, $M(3, 8, 6)$, and $N(3, 7, 3)$.

4. SCalc5 13.4.030. [292191] [Show Details](#)

Find the volume of the parallelepiped determined by the vectors \mathbf{a} , \mathbf{b} , and \mathbf{c} .

$$\mathbf{a} = 2\mathbf{i} + 3\mathbf{j} - 8\mathbf{k}$$

$$\mathbf{b} = \mathbf{i} - \mathbf{j}$$

$$\mathbf{c} = 2\mathbf{i} + 3\mathbf{k}$$

5. SCalc5 13.4.032. [349731] [Show Details](#)

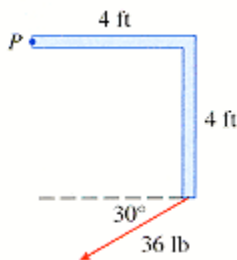
Find the volume of the parallelepiped with adjacent edges PQ , PR , and PS .

$$P(0,3,4), Q(2,6,7), R(-1,2,3), S(6,1,6)$$

 cubic units

6. SCalc5 13.4.036. [292192] [Show Details](#)

Find the magnitude of the torque about P if a 36 lb force is applied as shown.

 ft-lb


7. SCalc5 13.5.008. [349850] [Show Details](#)

Find parametric equations and symmetric equations for the line.

The line through through the points (-1,0,5) and (4,-3,3)

Parametric equations

$x(t) =$ 

$y(t) =$ 

$z(t) =$ 

Give the symmetric equations using the form below.

$$\frac{x+A}{B} = \frac{y+C}{D} = \frac{z+E}{F}$$

$A =$


$B =$

$C =$

$D =$

$E =$

$F =$

 symbolic formatting help

8. SCalc5 13.5.020. [349772] [Show Details](#)

Determine whether the lines L_1 and L_2 are parallel, skew, or intersecting. If they intersect, find the point of intersection. If they do not intersect, enter NONE.

$$L_1: x = 1 + t, y = 2 - t, z = 3t$$

$$L_2: x = 2 - s, y = 1 + 2s, z = 4 + s$$

parallel

skew

intersecting

(, ,)

9. SCalc5 13.5.024. [292173] [Show Details](#)

Find an equation of the plane.

The plane through the point $(4, 0, -3)$ and with normal vector $\mathbf{j} + 2\mathbf{k}$.

$y =$

[+ symbolic formatting help](#)

10. SCalc5 13.5.030. [292172] [Show Details](#)

Find an equation of the plane.

The plane that contains the line $x = 3 + 2t$, $y = t$, $z = 8 - t$ and is parallel to the plane $2x + 4y + 8z = 17$

$y =$

[+ symbolic formatting help](#)

11. SCalc5 13.5.032. [292184] [Show Details](#)

Find an equation of the plane.

The plane through the origin and the points $(2, -4, 6)$ and $(5, 1, 3)$.

$y =$

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12. SCalc5 13.5.036. [292188] [Show Details](#)

Find an equation of the plane.

The plane that passes through the point $(1, -1, 1)$ and contains the line with symmetric equations $x = 2y = 3z$

$y =$

[+ symbolic formatting help](#)

13. SCalc5 13.5.072. [292175] [Show Details](#)

Find the distance between the skew lines with parametric equations $x = 1 + t$, $y = 1 + 6t$, $z = 2t$, and $x = 1 + 2s$, $y = 5 + 15s$, $z = -2 + 6s$.

14. HW2.1-M281 [774568] [Show Details](#)

Problem 2.1. Penguin is standing on a glacier giving an interview to KMTR-TV concerning the state of higher education in Oregon. The glacier contains the points $(2, 1, -1)$, $(1, 2, 3)$, and $(3, -1, 1)$. Determine a vector which is perpendicular the glacier whose z coordinate is 1.



is the x-coordinate

is the y-coordinate

1 is the z-coordinate

15. HW2.2-M281 [774569] [Show Details](#)

Problem 2.2. Let $A = (1, 3, -4)$, $B = (3, -1, 2)$, and $C = (2, 1, 1)$.

- (1) Penguin lives in a parallelepiped \mathcal{P} determined by the vectors A , B , and C . Find the volume of \mathcal{P} .
- (2) The base \mathcal{B} is the parallelogram determined by the vectors A and B . Determine the area of \mathcal{B} ; she needs to ensure the TV stand will work properly.



is the volume

is the area

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