Ch 10, 12 WEBWORK REVIEW

Webwork 12.1 # 2

(A) If the positive z-axis points upward, an equation for a horizontal plane through the point $(2,5,2)$ is _____.

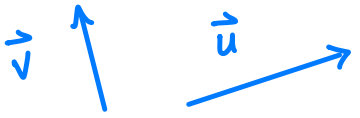
(B) An equation for the plane perpendicular to the x-axis and passing through the point $(2,5,2)$ is _____.

(C) An equation for the plane parallel to the xz-plane and passing through the point $(2,5,2)$ is _____.

Webwork 12.1 # 7

12.2

A sketch of $\vec{u}$ and $\vec{v}$ are



Sketch the vectors

1) $\vec{v} + \vec{u}$
2) $\vec{u} + \vec{v}$
3) $\vec{u} - \vec{v}$
4) $\vec{v} - \vec{u}$
5) $2\vec{v}$
6) $-\frac{3}{2}\vec{u}$

Webwork 12.3 #4

Consider the vectors

$$\vec{a} = 2\vec{i} + \vec{j} - \vec{k}, \qquad \vec{b} = \vec{i} - 2\vec{j} + 0\vec{k}, \qquad \vec{c} = -\vec{i} - 2\vec{j} + \vec{k}$$
$$\vec{d} = -2\vec{i} - \vec{j} + \vec{k}, \qquad \vec{g} = -\vec{i} - 2\vec{j} + \vec{k}.$$

Which pairs (if any) of these vectors are

(a) Are perpendicular?

_____

(Enter **none** *or a pair or list of pairs, e.g., if $\vec{a}$ is perpendicular to $\vec{b}$ and $\vec{c}$, enter* **(a,b),(a,c)**.*)*

(b) Are parallel?

_____

(Enter **none** *or a pair or list of pairs, e.g., if $\vec{a}$ is parallel to $\vec{b}$ and $\vec{c}$, enter* **(a,b),(a,c)**.*)*

(c) Have an angles less than $\pi/2$ between them?

_____

(Enter **none** *or a pair or list of pairs, e.g., if $\vec{a}$ is at an angle less than pi/2 from $\vec{b}$ and $\vec{c}$, enter* **(a,b),(a,c)**.*)*

(d) Have an angle of more than $\pi/2$ between them?

_____

(Enter **none** *or a pair or list of pairs, e.g., if $\vec{a}$ is at an angle greater than pi/2 from $\vec{b}$ and $\vec{c}$, enter* **(a,b),(a,c)**.*)*

12.4

If $\vec{v} \times \vec{w} = -10\,\vec{i} + 2\,\vec{j} + 5\,\vec{k}$,

what is $\vec{w} \times \vec{v}$?

Webwork # 4

If $\mathbf{a} = \langle 1, 3, 4 \rangle$ and $\mathbf{b} = \langle 2, 7, -5 \rangle$,

find a unit vector with positive first coordinate orthogonal to both $\mathbf{a}$ and $\mathbf{b}$.

Webwork 10.1 #2

A line is parameterized by $x = 4 + 3t$ and $y = 5 + 7t$.

(a) Which of the following points are on the section of the line obtained by restricting t to nonnegative numbers (for each, enter Y if the point is on the section, and N if not)?

$(-11, -30)$: ___

$(-5, -16)$: ___

$(4, 5)$: ___

Then, give one more point that *is* on the section of the line obtained by this restriction: ___

(b) What are the endpoints of the line segment obtained by restricting t to $-4 \leq t \leq -1$?

left endpoint : ___

right endpoint : ___

(c) How should t be restricted to give the part of the line below the x-axis (give your answer as an interval for t, for example, (3,8) or [-2,Inf))?

t must be in : ___

Webwork 10.2 #12

Consider the parametric curve given by

$$x = t - e^t, \qquad y = 5t + 5e^{-t}$$

(a) Find dy/dx and d^2y/dx^2 in terms of t.

dy/dx = _____

d^2y/dx^2 = _____

(b) Using "less than" and "greater than" notation, list the t-interval where the curve is concave upward.

Use upper-case "INF" for positive infinity and upper-case "NINF" for negative infinity. If the curve is never concave upward, type an upper-case "N" in the answer field.

t-interval: ___ $< t <$ ___

Webwork 10.3 #15

Sketch and describe each curve

1. $\theta = \pi/6$
2. $(x-2)^2 + (y-3)^2 = 25$
3. $r = 4$
4. $x = 3$