Trig 8.4

Find the inner product of two vectors
Find the cross product of two vectors
Determine whether two vectors are perpendicular

Quiz 8.3-8.4 is Tues.
MCT 8.1-8.4 Wed.

$\vec{a}\langle 2,5\rangle$

$\vec{b}\langle 3,1\rangle$

Is a•b = b•a?
Is axb = bxa?

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whiteboards

$a \cdot b \stackrel{?}{=} b \cdot a$

$6+5 = 6+5$

$11 \quad 11$

Find each inner product and state whether the vectors are perpendicular. Write *yes* or *no*.

11. $\langle 4, 8 \rangle \cdot \langle 6, -3 \rangle$

12. $\langle 3, 5 \rangle \cdot \langle 4, -2 \rangle$

13. $\langle 5, -1 \rangle \cdot \langle -3, 6 \rangle$

14. $\langle 7, 2 \rangle \cdot \langle 0, -2 \rangle$

15. $\langle 8, 4 \rangle \cdot \langle 2, 4 \rangle$

16. $\langle 4, 9, -3 \rangle \cdot \langle -6, 7, 5 \rangle$

$24 + -24 = 0$

$-24 + 63 + -15$

Find each cross product. Then verify that the resulting vector is perpendicular to the given vectors.

21. $\langle 0, 1, 2\rangle \times \langle 1, 1, 4\rangle$

22. $\langle 5, 2, 3\rangle \times \langle -2, 5, 0\rangle$

$$\begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 5 & 2 & 3 \\ -2 & 5 & 0 \end{vmatrix}$$

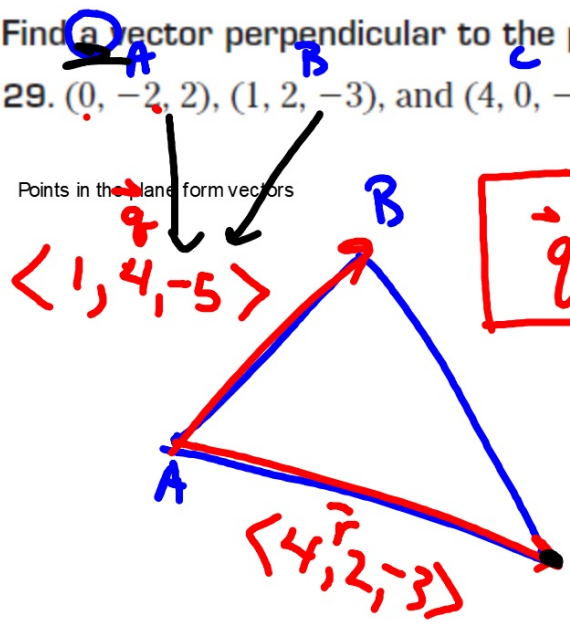
Is axb = bxa?

$$+\begin{vmatrix} 2 & 3 \\ 5 & 0 \end{vmatrix}\vec{i} - \begin{vmatrix} 5 & 3 \\ -2 & 0 \end{vmatrix}\vec{j} + \begin{vmatrix} 5 & 2 \\ -2 & 5 \end{vmatrix}\vec{k}$$

$$-15\vec{i} - 6\vec{j} + 29\vec{k}$$

Find a vector perpendicular to the plane containing the given points.

29. $(0, -2, 2)$, $(1, 2, -3)$, and $(4, 0, -1)$




$\vec{q} \times \vec{r}$

$\vec{r} \times \vec{q}$

(multiple answers are possible... depends on how you set it up)

$$\begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 1 & 4 & -5 \\ 4 & 2 & -3 \end{vmatrix}$$

$$+\begin{vmatrix} 4 & -5 \\ 2 & -3 \end{vmatrix}\vec{i} - \begin{vmatrix} 1 & -5 \\ 4 & -3 \end{vmatrix}\vec{j} + \begin{vmatrix} 1 & 4 \\ 4 & 2 \end{vmatrix}\vec{k}$$

$-10 \qquad -20 \qquad 16$

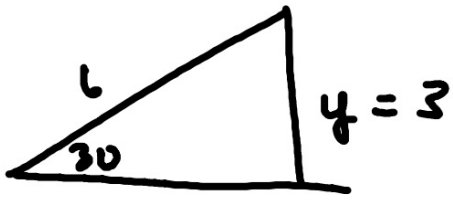
$-12 \qquad -3 \qquad 2$

$$-2\hat{i} - 17\hat{j} - 14\hat{k}$$

p. 511 #11 – 42 (6pts)

$W = F \cdot d$

$100 \cdot 3$




$\sin 30 = \frac{y}{6}$

$6 \sin 30 = y$

$6 \cdot \frac{1}{2} = y$