Trig 8.4 dot $= 0$

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

$\vec{a} \times \vec{b}$

$\perp$ to both

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

Is $a \cdot b = b \cdot a$?
Is axb = bxa?

whiteboards

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

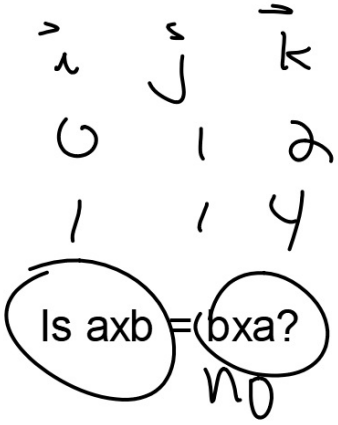
15. $\langle 8, 4\rangle \cdot \langle 2, 4\rangle$

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

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



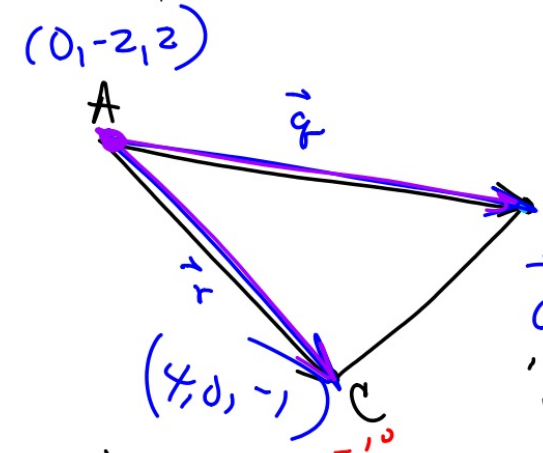
Find a vector perpendicular to the plane containing the given points.

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

A B C

3 Points in the plane form vectors

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



$\vec{q} = \langle 1, 4, -5 \rangle$

$\vec{r} = \langle 4, 2, -3 \rangle$

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

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

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

$-12 \qquad -20 \qquad -3 \qquad 2$

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

$$2\vec{i} + 17\vec{j} + 14\vec{k}$$