Vector Review Worksheet #1

For problems 1–9 use:

$\vec{u} = (-2,3)$ $\vec{v} = (3,4)$ $\vec{s} = (1,-7)$ $\vec{w} = (1,3,5)$ $\vec{t} = (2,1,-4)$

1. $\left\|\vec{w}\right\|$ =	2. $3\vec{u} - 2\vec{v}$ =	3. $\left\|2\vec{t}\right\|$ =	4. $\dfrac{7\vec{u}}{\left\|\vec{u}\right\|}$ =	5. $w \cdot t$ =

6. Find the measure of the angle between *w* and *t* to the nearest degree.
7. Find the unit vector having direction opposite of *u*.
8. Are the vectors *u* and *s* orthogonal? Why or why not?
9. Find $\vec{w} \times \vec{t}$

10. $\begin{vmatrix} 1 & -6 & 8 \\ -2 & 2 & -2 \\ 5 & 1 & 7 \end{vmatrix} =$

11. Find a unit vector $\perp$ to $\vec{u}$ = (1,2,3) and $\vec{v}$ = (5,3,2)

12. $\mathrm{i} \times \mathrm{k} = ?$

13. Find the area of the parallelogram having AB and AC as adjacent sides: A(2,1,3), B(1,4,2), C(–3,2,7)

14. Solve:
$$5x - 2y + z = 12$$
$$-2x + 3y - 2z = -2$$
$$4x - 6y + 3z = 3$$

15. Graph the ordered triple (not vector!) (3,–1,5) using the "box" method.

16. Kathy walks 5 blocks west along a vacant lot and then 12 blocks south to Alice's house. Annie starts at the same point and walks diagonally through the vacant lot coming out at the same point as Alice. If Kathy walked 522 feet west and 810 feet south, how far did Annie walk?

Answers:

1. $\sqrt{35}$	2. $(-12,1)$	3. $2\sqrt{21}$	4. $\left(\dfrac{-14}{\sqrt{13}}, \dfrac{21}{\sqrt{13}}\right)$	5. –15
6. $\theta = 123.6^\circ$	7. $\left(\dfrac{2}{\sqrt{13}}, \dfrac{-3}{\sqrt{13}}\right)$	8. No. dp = –23	9. $(-17,14,-5)$	10. –104
11. $\left(\dfrac{-5}{9\sqrt{3}}, \dfrac{13}{9\sqrt{3}}, \dfrac{-7}{9\sqrt{3}},\right)$	12. –j	13. $\sqrt{446}$	14. $(3,2,1)$	16. 963.63 ft.

Revised: 5/9/2008