Cross Product (Section 8) **Version E**
Rensselaer Calculus Skills Practice Page

No calculators will be allowed and no partial credit will be given.

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1. Find the cross product of $\vec{\mathbf{r}} = \langle -1, 4, 3 \rangle$ and $\vec{\mathbf{s}} = \langle 2, -3, -2 \rangle$.
2. Find the magnitude of the cross product of the vectors $\vec{u} = \langle 2, -1, -2 \rangle$ and $\vec{v} = \langle 0, -2, 2 \rangle$.
3. Find a non-zero vector orthogonal to both $\vec{u} = \langle 3, -1, 3 \rangle$ and $\vec{v} = \langle 0, 2, 1 \rangle$.
4. Find a unit vector orthogonal to both $\vec{u} = \langle 2, 2, 2 \rangle$ and $\vec{v} = \langle 2, 3, 1 \rangle$.
5. Find the area of the triangle with vertices $\mathbf{P}\,(2, 2, -1)$, $\mathbf{Q}\,(2, 3, -2)$ and $\mathbf{R}\,(1, -3, 4)$.
6. Find the area of the parallelogram defined by the vectors $\vec{u} = \langle 2, -1, -2 \rangle$ and $\vec{v} = \langle 0, 1, -1 \rangle$.

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\langle 1, 4, -5 \rangle$
2. $2 \cdot \sqrt{17}$
3. $\langle -7, -3, 6 \rangle$ or $\alpha \langle -7, -3, 6 \rangle$ for any $\alpha \neq 0$
4. $\pm \langle -\frac{2}{\sqrt{6}}, \frac{1}{\sqrt{6}}, \frac{1}{\sqrt{6}} \rangle$
5. $\frac{1}{\sqrt{2}}$
6. $\sqrt{17}$