Cross Product (Section 8) **Version A**
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 $\vec{\mathbf{r}} = \langle -1, -1, -2 \rangle$ and $\vec{\mathbf{s}} = \langle 3, 1, 2 \rangle$.
2. Find the magnitude of the cross product of the vectors $\vec{u} = \langle 2, -1, -2 \rangle$ and $\vec{v} = \langle 0, 3, 2 \rangle$.
3. Find a non-zero vector orthogonal to both $\vec{u} = \langle -1, 2, 3 \rangle$ and $\vec{v} = \langle 0, 3, 2 \rangle$.
4. Find a unit vector orthogonal to both $\vec{u} = \langle 2, 2, 0 \rangle$ and $\vec{v} = \langle 3, 3, -2 \rangle$.
5. Find the area of the triangle with vertices $\mathbf{P}\,(2, 2, -1)$, $\mathbf{Q}\,(2, 2, -2)$ and $\mathbf{R}\,(1, -2, 5)$.
6. Find the area of the parallelogram defined by the vectors $\vec{u} = \langle 3, -2, -2 \rangle$ and $\vec{v} = \langle -3, 3, 2 \rangle$.

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\langle 0, -4, 2 \rangle$
2. $2 \cdot \sqrt{17}$
3. $\langle -5, 2, -3 \rangle$ or $\alpha\langle -5, 2, -3 \rangle$ for any $\alpha \neq 0$
4. $\pm \langle -\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0 \rangle$
5. $\frac{\sqrt{17}}{2}$
6. $\sqrt{13}$