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

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\langle 1, 7, 5 \rangle$
2. $7 \cdot \sqrt{2}$
3. $\langle 1, 0, 2 \rangle$ or $\alpha \langle 1, 0, 2 \rangle$ for any $\alpha \neq 0$
4. $\pm \langle -\frac{5}{\sqrt{70}}, \frac{6}{\sqrt{70}}, -\frac{3}{\sqrt{70}} \rangle$
5. $\frac{\sqrt{3}}{2}$
6. $\sqrt{74}$