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

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Answer Key Rensselaer Calculus Skills Practice Page, Fall 2007

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1. $\langle -7, 2, -1 \rangle$
2. $\sqrt{83}$
3. $\langle 4, -4, 4 \rangle$ or $\alpha\langle 4, -4, 4 \rangle$ for any $\alpha \neq 0$
4. $\pm\langle \frac{1}{\sqrt{19}}, -\frac{3}{\sqrt{19}}, -\frac{3}{\sqrt{19}} \rangle$
5. $2 \cdot \sqrt{6}$
6. $2 \cdot \sqrt{6}$