Name: _____

Physics 261 Worksheet #1: Vector Review

The topic is vectors. **Don't forget the back side!**

For the following chart, let $\vec{\mathbf{A}}$ and $\vec{\mathbf{B}}$ be vectors with components (in a particular Cartesian coordinate system!) given by (A_x, A_y, A_z) and (B_x, B_y, B_z). If the *basis vectors* for that coordinate system are $\hat{\mathbf{i}}$, $\hat{\mathbf{j}}$, and $\hat{\mathbf{k}}$, then we can also write $\vec{\mathbf{A}} = A_x\hat{\mathbf{i}} + A_y\hat{\mathbf{j}} + A_z\hat{\mathbf{k}}$. Let α be the angle between $\vec{\mathbf{A}}$ and $\vec{\mathbf{B}}$. Let $c > 0$ and $c' < 0$ be scalar quantities. For the third column, use the specific values: $\vec{\mathbf{A}} = 3\hat{\mathbf{i}} - 2\hat{\mathbf{j}} + 4\hat{\mathbf{k}}$, $\vec{\mathbf{B}} = -\hat{\mathbf{i}} + 2\hat{\mathbf{j}} - 3\hat{\mathbf{k}}$, $c = 2$, and $c' = -1/2$.

	Geometric/Coordinate-Free	**Coordinates**	**Specific**
$\vec{\mathbf{A}}$			
$c\vec{\mathbf{A}}$			
$c'\vec{\mathbf{A}}$			
$\vec{\mathbf{A}} \perp \vec{\mathbf{B}}$			
$\vec{\mathbf{A}} = \vec{\mathbf{B}}$			
$\vec{\mathbf{A}} + \vec{\mathbf{B}}$			
$\vec{\mathbf{A}} - \vec{\mathbf{B}}$			
$\vec{\mathbf{A}} \cdot \vec{\mathbf{B}}$			
$\vec{\mathbf{A}} \times \vec{\mathbf{B}}$			
$\lvert\vec{\mathbf{A}}\rvert$			
$\vec{\mathbf{A}} + \vec{\mathbf{B}} = \vec{\mathbf{B}} + \vec{\mathbf{A}}$			