## Math 224 <br> Quiz 1 <br> Thursday, September 6, 2007

1. Find all scalars $c$ such that the vector $\left[c^{2},-4\right]$ is parallel to the vector $[1,-2]$.
2. Classify the vectors $[2,1,4,-1]$ and $[0,1,2,4]$ as parallel, perpendicular, or neither.
3. Let $A=\left[\begin{array}{ccc}1 & 0 & -1 \\ -2 & 2 & 0\end{array}\right]$. Let $B=\left[\begin{array}{c}4 \\ 1 \\ -2\end{array}\right]$. Find $A B$ and $B A$, if defined.
4. If $B$ is an $m \times n$ matrix and if $B=A^{T}$, find the size of
(a) $A$
(b) $A A^{T}$
(c) $A^{T} A$
