

1. F&C 1.2
2. F&C 1.3
3. F&C 1.9. You need prove this by working out the terms in component form. Just work out the equality for one component of the triple cross product and argue that the other two components are similar.
4. F&C 1.19
5. F&C 1.20
6. F&C 1.24
7. F&C 1.25
8. Consider two Cartesian coordinate systems xyz and $x'y'z'$ that initially coincide. The $x'y'z'$ undergoes two successive rotations:
First, rotate $+90^\circ$ about the original x -axis. Second, rotate -45° about the y' axis (which is rotated with respect to its original position).
 - (a) Find the transformation matrix $\mathbf{T}=\mathbf{R}_2\mathbf{R}_1$ such that $\mathbf{T}[\mathbf{A}]_{xyz}=[\mathbf{A}]_{x'y'z'}$.
 - (b) Find the components of vector $\mathbf{A}=[1,1,1]_{xyz}$ in the $x'y'z'$ coordinate system.
 - (c) Verify that the magnitude of \mathbf{A} is the same in both coordinate systems.

Challenge Problem (Extra Credit) F&C 1.15