Problems: Limits in Spherical Coordinates

1. Find the limits needed to use spherical coordinates to compute the volume of a sphere of radius a.

2. Find limits in spherical coordinates which describe the region bounded by the sphere $\rho = a$ and the cone $\phi = \alpha$.

3. Find limits for a solid spherical cap obtained by slicing a solid sphere of radius $a\sqrt{2}$ by a plane at a distance a from the center.

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