ASTR 680 Practice questions for lecture 9: Black Holes part 1

1. In Schwarzschild coordinates, r is the circumferential radius; that is, if $dt = dr = d\theta = 0$, the distance from $\phi = 0$ to $\phi = 2\pi$, divided by 2π, equals r. What about in the Kerr spacetime described using Boyer-Lindquist coordinates?

2. Compute the frame-dragging frequency ω (equation (4) in the notes) for the Earth, at the surface of the Earth.

3. Compute the fractional difference made by the $\pm a M^{1/2}$ term in the denominator of equation (5), for a binary neutron star of your choice.