Consider, once again, a superposition of nonlifting flow over a cylinder and a vortex located at the center of the cylinder:

\[ \psi = (V_\infty r \sin \theta) \left(1 - \frac{R^2}{r^2}\right) + \frac{\Gamma}{2\pi} \ln \frac{r}{R} \]  
(Note: \( R \) is the radius of the cylinder)

For the case of \( \theta = -\frac{\pi}{2} \) but \( r \neq R \), determine the equation of stagnation streamline. Let \( \Gamma = 5\pi V_\infty R \) (\( \Gamma > 4\pi V_\infty R \)). Sketch streamlines of flow field (including the stagnation streamline).

**Hints . . .**
- Work review problems, first.
- Substitute stagnation point(s) into streamfunction, in order to determine the equation of stagnation streamline.