5.5c $\sqrt{\mu - \Delta v/2\rho} + \frac{1}{\mu} = \pm \frac{i}{2\hat{\sigma}_x}$

$\mu\sqrt{\mu - \Delta v/2\rho} + 1 = \frac{i\mu}{2\hat{\sigma}_x}$

$R = \frac{\hat{r}}{\hat{\sigma}_x}$

$\omega = \frac{-\mu\sqrt{\mu - \Delta v/2\rho}}{4(\mu\sqrt{\mu - \Delta v/2\rho} + 1)}$

$= \frac{\frac{-i\mu}{2\hat{\sigma}_x} + 1}{\frac{2i\mu}{\hat{\sigma}_x}}$ $\Rightarrow \frac{-i\mu}{2\hat{\sigma}_x} \cdot \frac{\hat{\sigma}_x}{2i\mu} + \frac{\hat{\sigma}_x}{2i\mu}$

$\omega = -\frac{1}{4} + \frac{\hat{\sigma}_x}{2i\mu} = -\frac{1}{4} + \frac{i\hat{\sigma}_x}{2\mu}$

$A_\infty = \exp(\omega R^2)$

$= \exp\left(\left[\frac{-i\hat{\sigma}_x}{2\mu} + \frac{1}{4}\right]\left(\frac{\hat{r}}{\hat{\sigma}_x}\right)^2\right)$

$= \exp\left(\frac{-i\hat{r}^2}{2\mu\hat{\sigma}_x} + \frac{\hat{r}^2}{\hat{\sigma}_x^2}\right)$