5.5 c) $\omega = -\frac{\mu\sqrt{\mu - \Delta V/2\rho}}{4\left(\mu\sqrt{\mu - \Delta V/2\rho} \pm 1\right)}$

$$\sqrt{\mu - \Delta V/2\rho} = \pm\frac{i}{2\sigma_x^2} - \frac{1}{\mu}$$

$$\omega = -\frac{\mu\left(\pm\frac{i}{2\sigma_x^2} - \frac{1}{\mu}\right)}{4\left(\mu\left(\pm\frac{i}{2\sigma_x^2} - \frac{1}{\mu}\right) \pm 1\right)}$$

$$\omega = -\frac{\pm\frac{\mu i}{2\sigma_x^2} + 1}{4\left(\pm\frac{\mu i}{2\sigma_x^2} - 1 \pm 1\right)}$$

Assume $+1$

$$\omega = \frac{\pm\frac{\mu i}{2\sigma_x^2} + 1}{\pm\frac{2\mu i}{\sigma_x^2}}$$

$$\omega = \frac{1}{2} \pm \frac{\sigma_x^2}{2\mu i}$$

$$\Downarrow$$

$$A_\infty \propto \exp\left(-\frac{i\hat{r}^2}{2\mu\sigma_x} + \frac{\hat{r}}{4\sigma_x^2}\right)$$