5.5 b Part 1

$$\mu - \Delta v_{1/2\rho} = \frac{16\omega^2}{\mu^2(4\omega+1)^2}$$

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

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

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

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

$$4\omega\left(\mu\sqrt{\mu - \Delta v_{1/2\rho}} - 1\right) = -\mu\sqrt{\mu - \Delta v_{1/2\rho}}$$

$$\boxed{\omega = \frac{-\mu\sqrt{\mu - \Delta v_{1/2\rho}}}{4\left(\mu\sqrt{\mu - \Delta v_{1/2\rho}} - 1\right)}}$$