We have the potential $V(x) = \frac{1}{2}m\omega^2x^2 + \lambda x^4$, and we want to compute the ground state energy of the system. Since we know the ground state solution to the harmonic oscillator, we let $H^0 = \frac{1}{2}m\omega^2x^2$, and let $H^1 = \lambda x^4$. We then have that $\psi_0^0 = \left(\frac{m\omega}{\pi\hbar}\right)^{1/4} e^{-m\omega x^2/2\hbar}$, and $E_0^0 = \frac{1}{2}\hbar\omega$. We can now compute the first order corrections to the energy, E_0^1.

$$\begin{aligned}
E_0^1 &= \langle\psi_0^0|H^1|\psi_0^0\rangle \\
&= \left(\frac{m\omega}{\pi\hbar}\right)^{1/2} \lambda \int e^{-m\omega x^2/\hbar} x^4 \, dx \\
&= \frac{3}{4}\left(\frac{m\omega}{\pi\hbar}\right)^{1/2} \lambda \left(\frac{\pi\hbar^5}{m^5\omega^5}\right)^{1/2} \\
&= \frac{3}{4}\lambda
\end{aligned}$$

Where we have let $m = \omega = \hbar = 1$, and we have used the known solution to the gaussian integral

$$\int x^4 e^{-ax^2} \, dx = \frac{3}{4}\frac{\sqrt{\pi}}{a^{5/2}}$$

Now applying the first order corrections, we have that the ground state energy is given by

$$E_0 = \frac{1}{2} + \frac{3}{4}\lambda$$