\[ R_{\text{max}}(m) = \left( (N_G - L) \sigma_w^2 \right) \left( (N_G - L) \sigma_w^2 \right) = (N_G - L)^2 \sigma_w^4 \]

\[ \sigma_w^4 > 0 \]

\[ (\sigma_x^2 |h(0)|^2 + (N_G - L + 1) \sigma_w^2) \left( \sigma_x^2 |h(0)|^2 + (N_G - L + 1) \sigma_w^2 \right) = -\sigma_x^4 |h(0)|^4 + (N_G - L + 1)^2 \sigma_w^4 \]

\[ \approx -\sigma_x^4 |h(0)|^4 \]

\[ < 0 \]