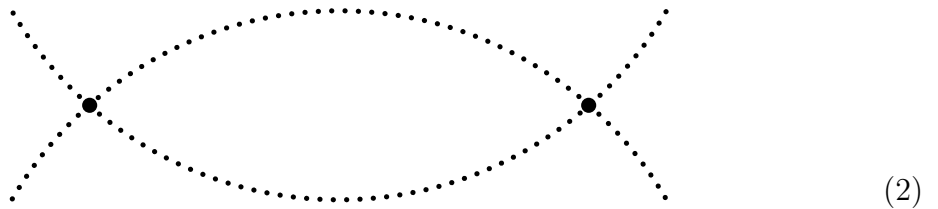1. First, a calculational exercise. In class, I described the higher-derivative UV regular-
   ization scheme in which propagators behave at high Euclidean momenta as

$$\cdots\cdots\cdots\cdots \;=\; \frac{1}{p^2 + m^2} \;-\; \frac{1}{p^2 + \Lambda^2} \;\approx\; \frac{1}{\Lambda^{-2}p^4 + p^2 + m^2}\,. \qquad (1)$$

   Use this UV cutoff to calculate the scalar loop

$$(2)$$

   Your result should have the same form as the loop with a hard-edge cutoff, provided
   the respective cutoff parameters are related according to

$$\Lambda^2_{\text{higher}-\text{derivative}} \;=\; \Lambda^2_{\text{hard}-\text{edge}} \times \text{a numerical constant.} \qquad (3)$$

2. And now a reading assignment, §7.3 of the *Peskin & Schroeder* textbook. Read about
   the *Optical Theorem* in QFT and Cutkoski's cutting rules.