

Solution (#1697) Note

$$-\frac{\mathrm{d}\bar{f}}{\mathrm{d}s} = \frac{1}{s} - \frac{s}{s^2 + a^2}.$$

So

$$\bar{f}(s) = \frac{1}{2} \ln \left(1 + \frac{a^2}{s^2} \right).$$