which yield a fair CDS spread of roughly

122 bps

c) The value of the contract to a buyer of a CDS spread is equal to

$$V_{contract} = \left(V_0^{def}(N) - V_0^{prem}(x_y; N)\right) \cdot 100'000'000$$

Plugging in Python gives a value of the contract of

$$V_{contract} = 1.56 \text{ million}$$