

$$\begin{aligned}
 a) \quad C_{300}(x) &= 4486.8 + \min(x, 300) + \max(0, 0.1 \cdot \min(x - 300, 7000)) \\
 &= 4486.8 + \begin{matrix} \text{if } x < 300: x \\ \text{else: } 300 \end{matrix} + \begin{matrix} \text{if } x > 300: \text{if } x > 7000: 700 \\ \text{else: } 0.1 \cdot (x - 300) \\ \text{else: } 0 \end{matrix}
 \end{aligned}$$

franchise

// $\min(x, y)$ → takes the smaller value

b) see graph

c) franchise 1000 CHF is never the best option
franchise 2500 CHF is the best option, if your annual medical bill is smaller than 1890.67 CHF

d) You should choose c2500 if you expect an annual bill that is smaller than ≈ 2000 CHF. otherwise, c300 is the best. All others are tradeoffs and are never the best case.

e) A reason to choose an intermediate insurance rate might be: it would exceed your budget/savings if you would have to pay over 5'500 CHF in the worst case, so to prevent this, you choose a lower franchise. ↳ of c2500
↳ but not quite c300, because this one would be too expensive for sure be quite expensive.
It's to make a compromise between security (c300) and risk (c2500) ↳ 3'000 ~ 6'000 CHF
↳ 4'500 ~ 5'500 CHF