

Problem 1

1.a

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1.b

Random **math** test¹

$$\phi(t) = \frac{1}{\sqrt{2\pi}} \int_0^t e^{-x^2/2} dx$$

Problem 2

2.a

Some inference rule

$$\frac{\Gamma \vdash e_1 : \tau_1 \quad \Gamma \vdash e_2 : \tau_2}{\Gamma \vdash \underbrace{\langle e_1, e_2 \rangle}_e : \tau_1 \times \tau_2} \text{Meh}$$

2.b

This is some code trace for `fact 2`

```
fun fact 0 = 1
  | fact n = n * fact (n - 1)
```

$$\begin{aligned} \text{fact } 2 &= 2 * (\text{fact } (2 - 1)) \quad (\text{definition of fact}) \\ &= 2 * (\text{fact } 1) \quad (\text{math}) \\ &= 2 * (1 * (\text{fact } (1 - 1))) \quad (\text{definition of fact}) \\ &= 2 * (1 * (\text{fact } 0)) \quad (\text{math}) \\ &= 2 * (1 * 1) \quad (\text{definition of fact}) \\ &= 2 * 1 \quad (\text{math}) \\ &= 2 \quad (\text{math}) \end{aligned}$$

Problem 3

3.a

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magnam aliquam quaerat voluptatem. Ut enim aeque doleamus animo, cum corpore dolemus, fieri.

¹inspired by <https://ilorentz.org/beenakker/MO/fonttest.tex>