We can plot the steady state distribution for different Peclet numbers by substituting the number in.

$$Pe = \frac{vH}{D}$$

first the normalizing constant:

$$Z_1 = \frac{D}{v}\left(\exp\left(\frac{vH}{D}\right) - 1\right)$$

$$= \frac{D}{v}\left(\exp(Pe) - 1\right)$$

$$\left(\frac{D}{v} = \left(\frac{1}{H} \cdot Pe\right)^{-1}\right) \Rightarrow$$

$$= \left(\frac{1}{H} \cdot Pe\right)^{-1} \cdot \left(\exp(Pe) - 1\right)$$

then the solution

$$C = \frac{1}{Z_1} \cdot \exp\left(\frac{v}{D} z\right)$$

$$= \frac{1}{H} \cdot Pe \cdot \frac{1}{\exp(Pe) - 1} \cdot \exp\left(\frac{z}{H} \cdot Pe\right)$$

the shape does not depend on $\frac{1}{H}$ hence we can drop it and we use z/H as our new variable (i think. ask Uffe)

$$C = Pe/(\exp(Pe) - 1) \cdot \exp\left(z/H \cdot Pe\right)$$

See the rest in solutions.