In[2]:= $$\text{NuFlatPlate} = \left(0.825 + \frac{0.387\, \text{Ra}_L{}^{1/6}}{\left(1 + \left(\frac{0.492}{\text{Pr}}\right)^{9/16}\right)^{8/27}}\right)^2;$$

In[3]:= $$\text{NuHorzCylinder} = \left(0.6 + \frac{0.387\, \text{Ra}_D{}^{1/6}}{\left(1 + \left(\frac{0.559}{\text{Pr}}\right)^{9/16}\right)^{8/27}}\right)^2;$$

In[4]:= $$L = 5\,D;\ \text{Ra}_L = \frac{g\,\beta\,(\text{Tw} - \text{T0})\,L^3}{\nu\,\alpha};\ \text{Ra}_D = \frac{g\,\beta\,(\text{Tw} - \text{T0})\,D^3}{\nu\,\alpha};$$

In[5]:= $$\text{hFlatPlate} = \text{NuFlatPlate}\,\frac{\kappa}{L}\ \text{// \# /. Pr} \to 0.71\ \&$$

Out[5]= $$\frac{\kappa\left(0.825 + 0.725426\left(\frac{D^3\, g\,(-\text{T0}+\text{Tw})\,\beta}{\alpha\,\nu}\right)^{1/6}\right)^2}{5\,D}$$

In[6]:= $$\text{hHorzCylinder} = \text{NuHorzCylinder}\,\frac{\kappa}{D}\ \text{// \# /. Pr} \to 0.71\ \&$$

Out[6]= $$\frac{\kappa\left(0.6 + 0.321277\left(\frac{D^3\, g\,(-\text{T0}+\text{Tw})\,\beta}{\alpha\,\nu}\right)^{1/6}\right)^2}{D}$$

In[7]:=
```
hRatio = hFlatPlate / hHorzCylinder // Simplify[#] &
```

Out[7]= $$\frac{\left(0.825 + 0.725426\left(\frac{D^3\, g\,(-\text{T0}+\text{Tw})\,\beta}{\alpha\,\nu}\right)^{1/6}\right)^2}{5\left(0.6 + 0.321277\left(\frac{D^3\, g\,(-\text{T0}+\text{Tw})\,\beta}{\alpha\,\nu}\right)^{1/6}\right)^2}$$

In[8]:= $$\text{Plot}\left[\text{Evaluate}\left[\text{hRatio} /.\ g \to \left(\text{Ra}\,\nu\,\alpha \big/ \left(\beta\,(\text{Tw} - \text{T0})\,D^3\right)\right)\right], \{\text{Ra}, 10\hat{}0, 10\hat{}8\},\ \text{AxesLabel} \to \left\{\text{Ra}, \frac{h_1}{h_2}\right\}, \text{ScalingFunctions} \to \{\text{"Log"}\}, \text{GridLines} \to \text{Automatic}\right]$$

Out[8]=