

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

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

$$\text{In[*]} := \text{L} = 5 \text{D}; \text{Ra}_L = \frac{g \beta (T_w - T_0) L^3}{\nu \alpha}; \text{Ra}_D = \frac{g \beta (T_w - T_0) D^3}{\nu \alpha};$$

$$\text{In[*]} := \text{hFlatPlate} = \text{NuFlatPlate} \frac{\kappa}{L} \quad // \quad \# /. \text{Pr} \rightarrow 0.71 \&$$

$$\text{Out[*]} = \frac{\kappa \left( 0.825 + 0.725426 \left( \frac{D^3 g (-T_0 + T_w) \beta}{\alpha \nu} \right)^{1/6} \right)^2}{5 D}$$

$$\text{In[*]} := \text{hHorzCylinder} = \text{NuHorzCylinder} \frac{\kappa}{D} \quad // \quad \# /. \text{Pr} \rightarrow 0.71 \&$$

$$\text{Out[*]} = \frac{\kappa \left( 0.6 + 0.321277 \left( \frac{D^3 g (-T_0 + T_w) \beta}{\alpha \nu} \right)^{1/6} \right)^2}{D}$$

$$\text{In[*]} := \text{hRatio} = \text{hFlatPlate} / \text{hHorzCylinder} \quad // \quad \text{Simplify}[\#] \&$$

$$\text{Out[*]} = \frac{\left( 0.825 + 0.725426 \left( \frac{D^3 g (-T_0 + T_w) \beta}{\alpha \nu} \right)^{1/6} \right)^2}{5 \left( 0.6 + 0.321277 \left( \frac{D^3 g (-T_0 + T_w) \beta}{\alpha \nu} \right)^{1/6} \right)^2}$$

$$\text{In[*]} := \text{Plot} \left[ \text{Evaluate} \left[ \text{hRatio} /. g \rightarrow (Ra \nu \alpha / (\beta (T_w - T_0) D^3)) \right], \{Ra, 10^4, 10^{12}\}, \right. \\ \left. \text{AxesLabel} \rightarrow \left\{ Ra, \frac{h_1}{h_2} \right\}, \text{ScalingFunctions} \rightarrow \{\text{"Log"}\}, \text{GridLines} \rightarrow \text{Automatic} \right]$$

