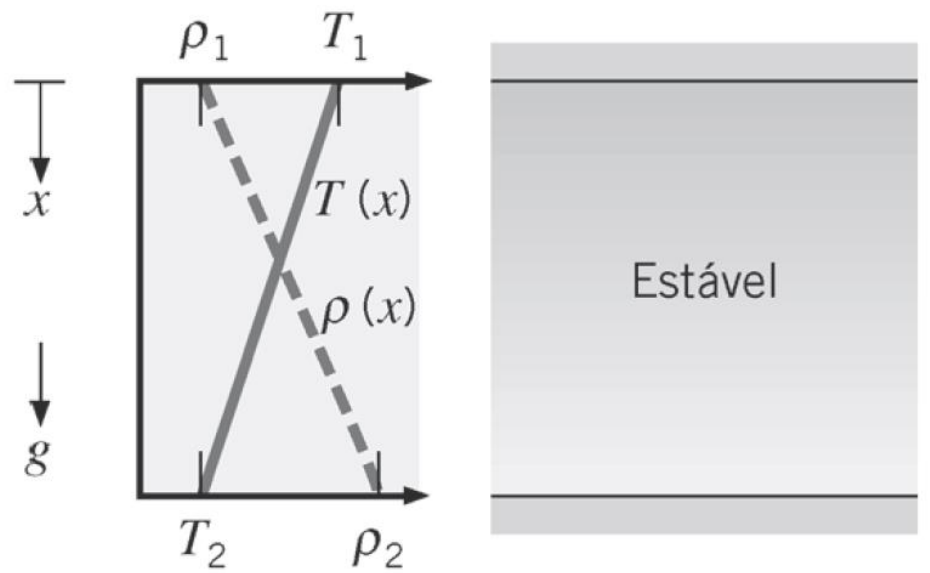
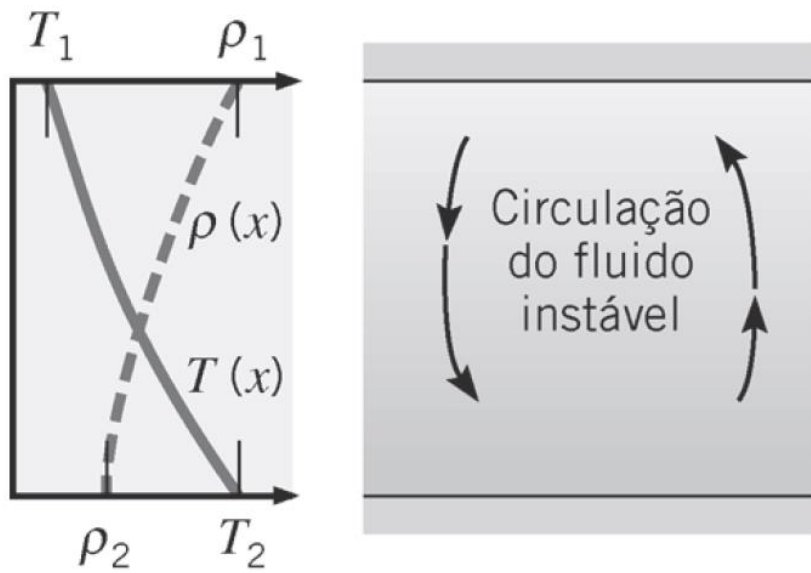
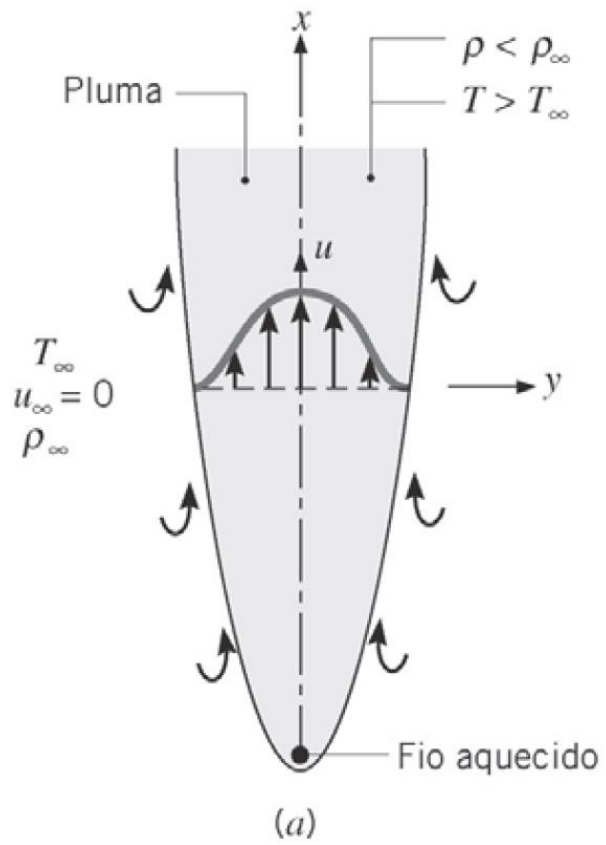
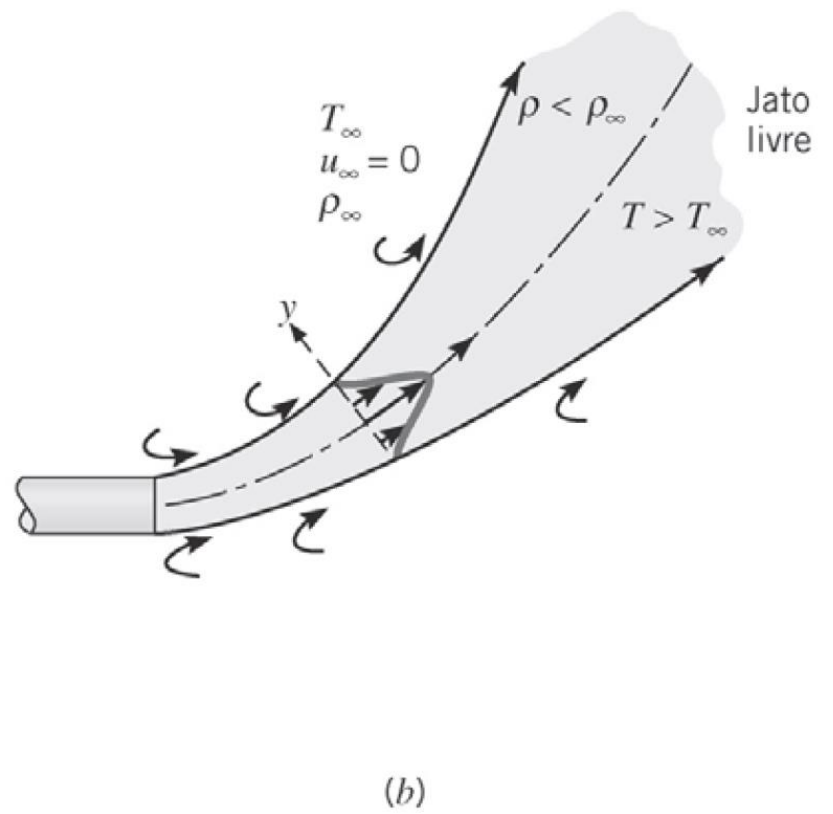


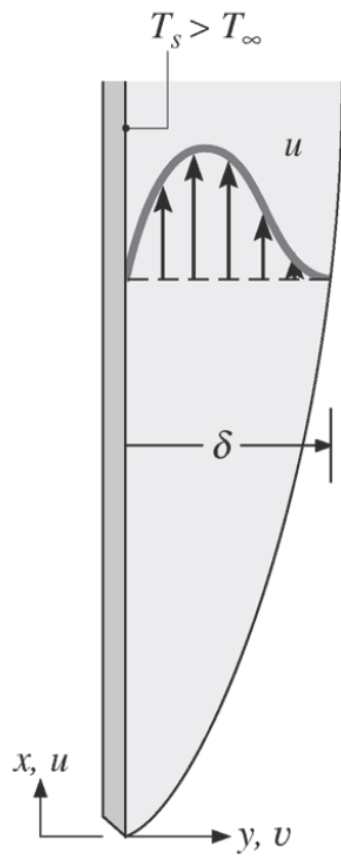
Convecção Natural ou livre





g



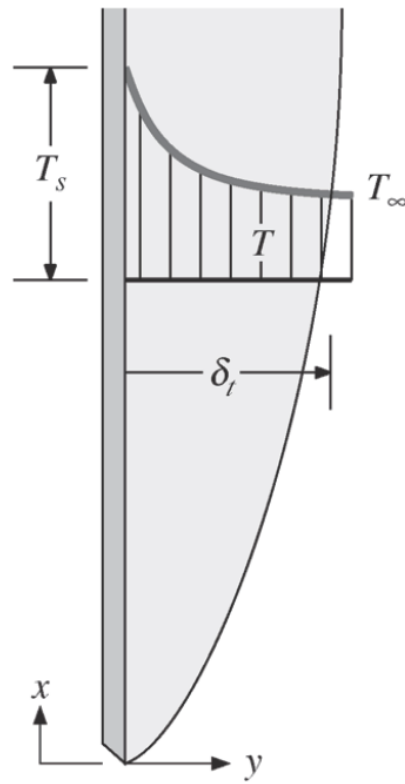


(a)

Fluido
quiescente

T_∞, ρ_∞

g

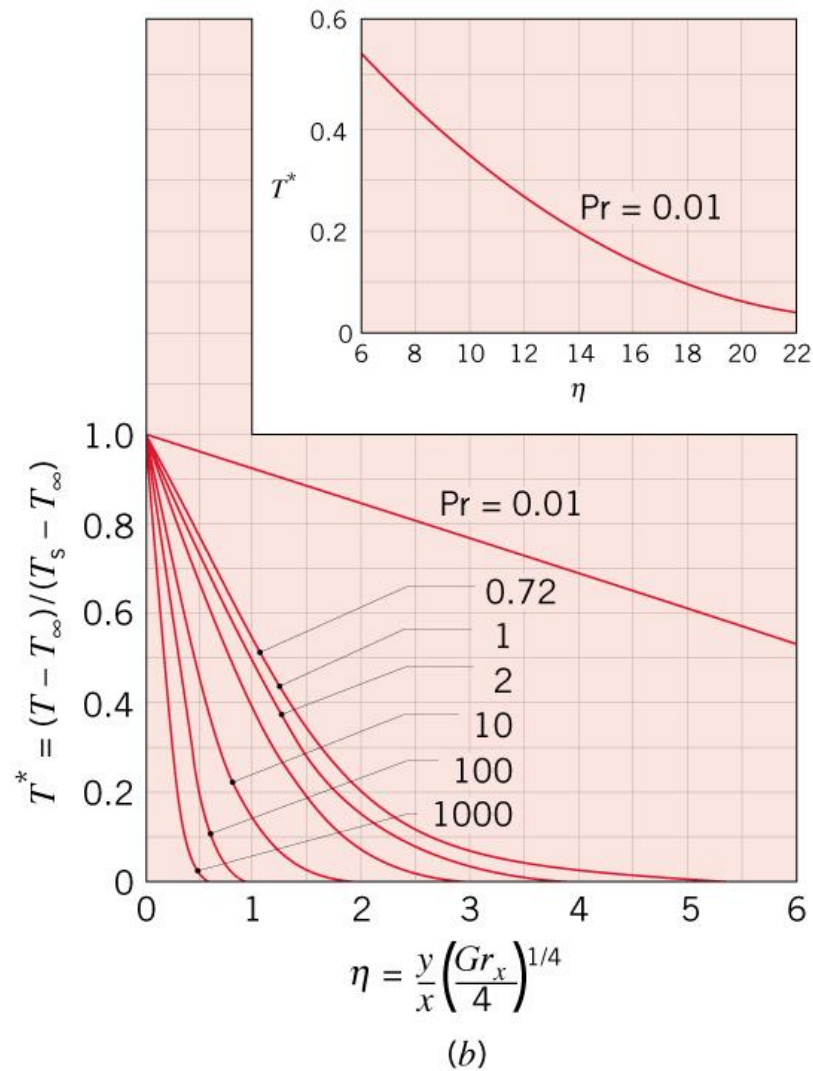
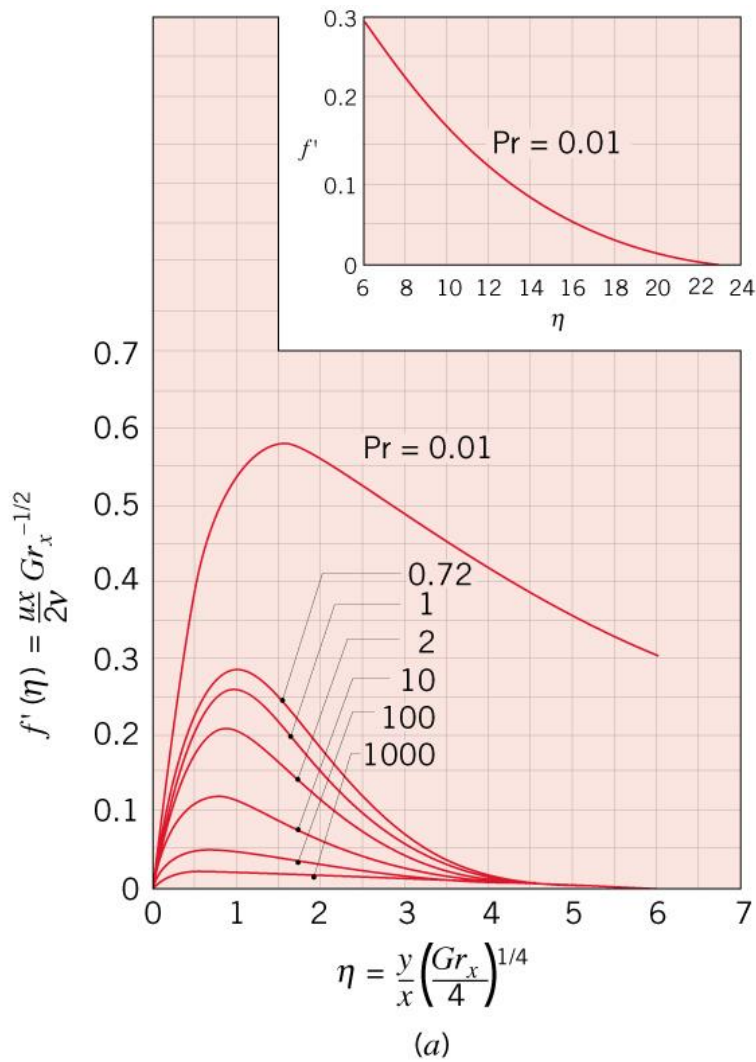


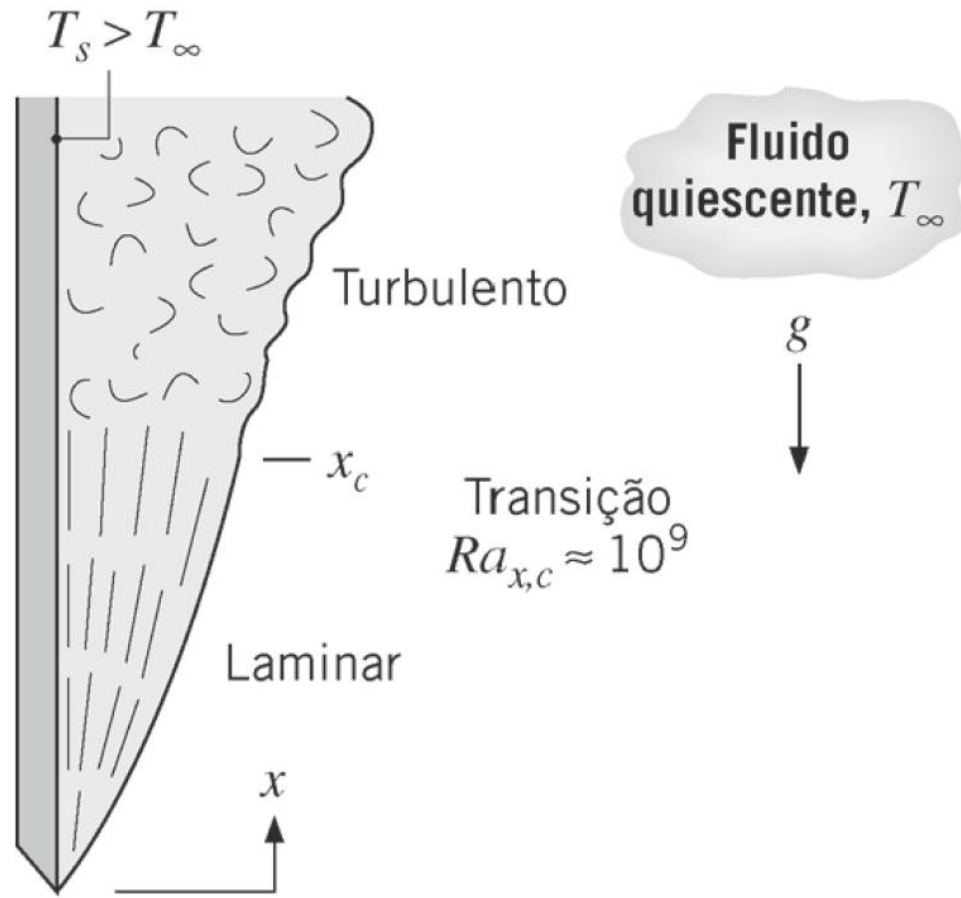
(b)

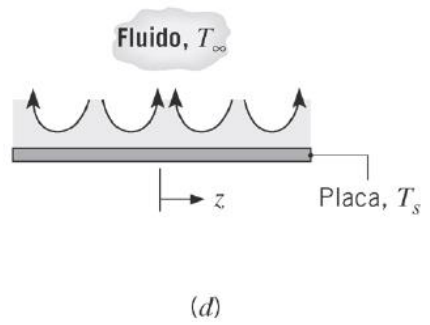
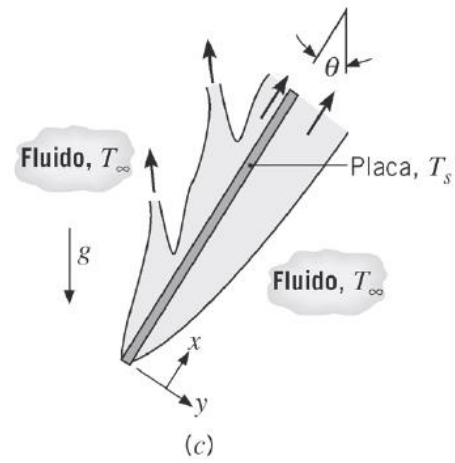
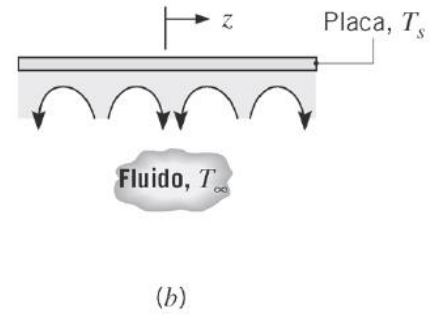
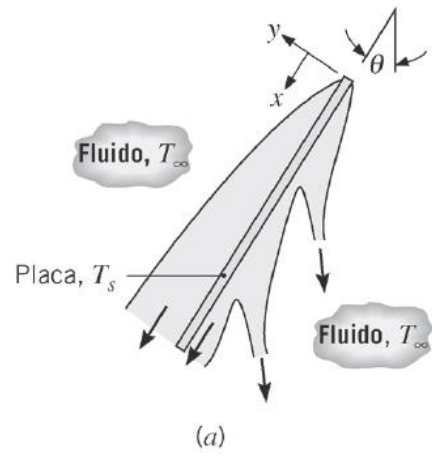
Fluido
quiescente

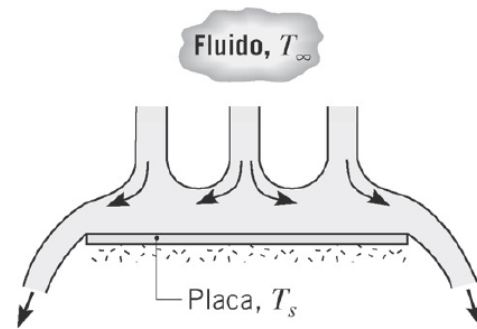
T_∞, ρ_∞

g

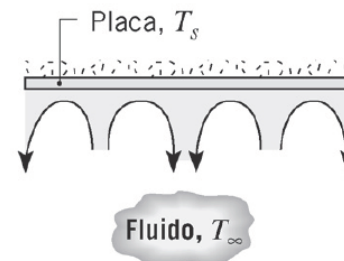




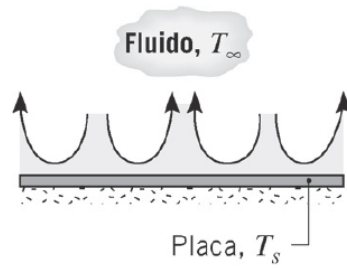




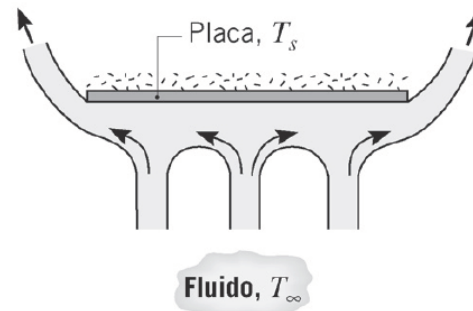
(a)



(b)



(c)



(d)

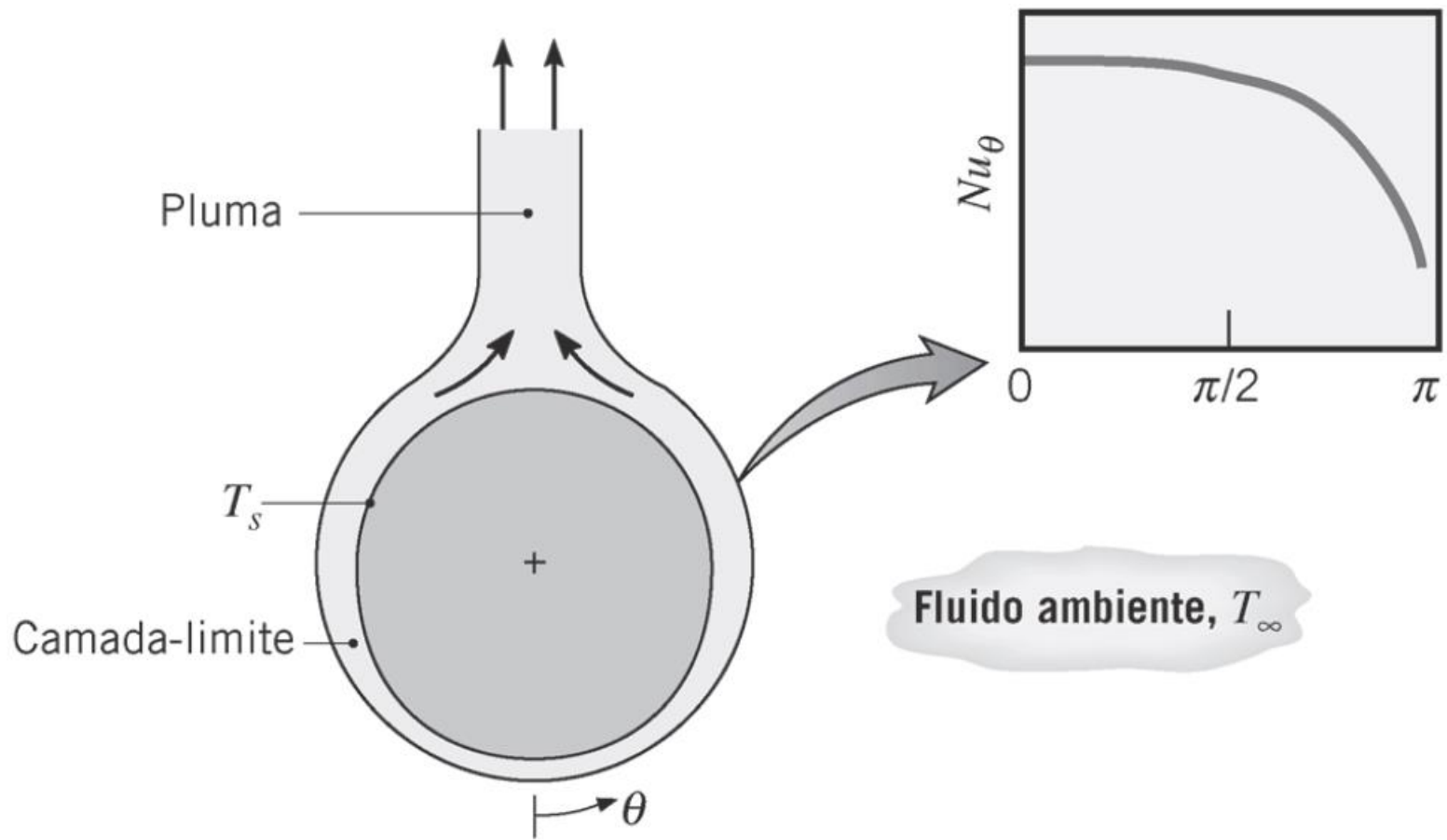


TABELA 9.2 Resumo de correlações empíricas para a convecção natural em geometrias imersas

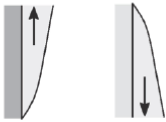

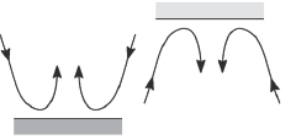
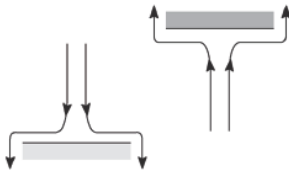


Geometria	Correlação Recomendada	Restrições
1. Placas verticais ^a 	Equação 9.26	Nenhuma
2. Placas inclinadas Superfície fria para cima ou quente para baixo 	Equação 9.26 $g \rightarrow g \cos \theta$	$0 \leq \theta \leq 60^\circ$

TABELA 9.2 Resumo de correlações empíricas para a convecção natural em geometrias imersas (Continuação)

Geometria	Correlação Recomendada	Restrições
3. Placas horizontais (a) Superfície quente para cima ou fria para baixo 	Equação 9.30 Equação 9.31	$10^4 \leq Ra_L \leq 10^7, Pr \geq 0,7$ $10^7 \leq Ra_L \leq 10^{11}$
(b) Superfície fria para cima ou quente para baixo 	Equação 9.32	$10^4 \leq Ra_L \leq 10^9, Pr \geq 0,7$
4. Cilindro horizontal 	Equação 9.34	$Ra_D \leq 10^{12}$
5. Esfera 	Equação 9.35	$Ra_D \leq 10^{11}$ $Pr \geq 0,7$

^a A correlação pode ser utilizada para um cilindro vertical se $(D/L) \geq (35/Gr_L^{1/4})$.