

PME2334

Aula 1

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Meio contínuo

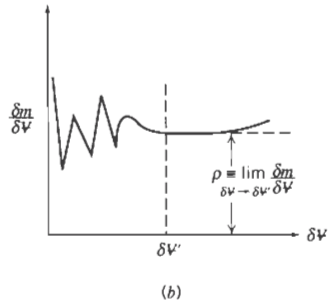
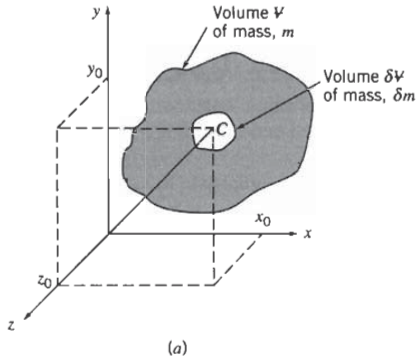


Fig. 2.1 Definition of density at a point.

Dimensionalidade do escoamento

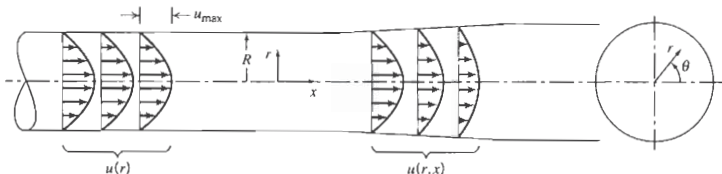


Fig. 2.2 Examples of one- and two-dimensional flows.

Tensão: ideia do conceito

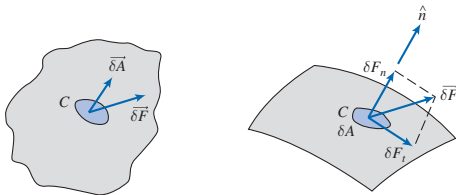
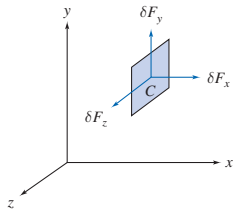
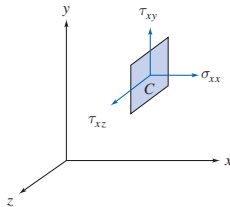


Fig. 2.6 The concept of stress in a continuum.

$$\sigma_n = \lim_{\delta A_n \rightarrow 0} \frac{\delta F_n}{\delta A_n}$$



(a) Force components



(b) Stress components

$$\tau_n = \lim_{\delta A_n \rightarrow 0} \frac{\delta F_t}{\delta A_n}$$

Fig. 2.7 Force and stress components on the element of area δA_x .

Tensão: partícula fluido

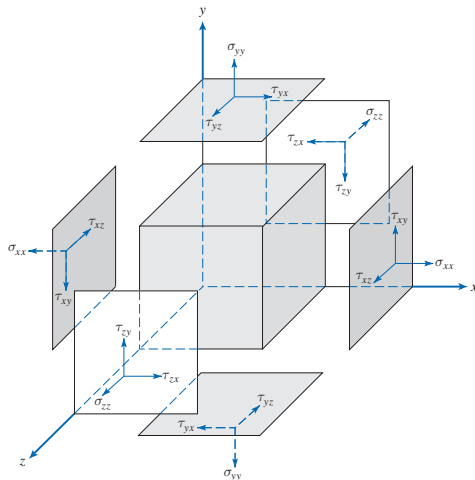


Fig. 2.8 Notation for stress.

Viscosidade

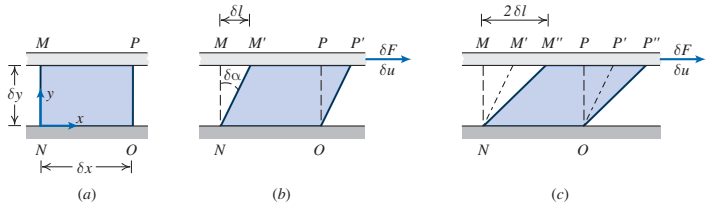


Fig. 2.9 (a) Fluid element at time t , (b) deformation of fluid element at time $t + \delta t$, and (c) deformation of fluid element at time $t + 2\delta t$.

$$\tau_{yx} = \lim_{\delta A_y \rightarrow 0} \frac{\delta F_x}{\delta A_y} = \frac{dF_x}{dA_y}$$

Viscosidade fluidos não-Newtonianos

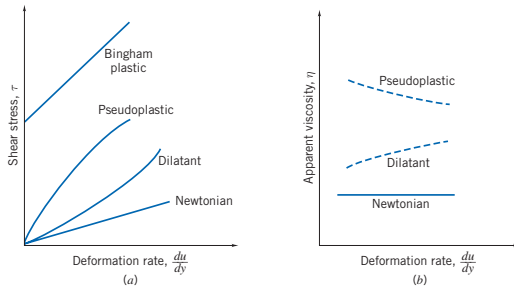


Fig. 2.10 (a) Shear stress, τ , and (b) apparent viscosity, η , as a function of deformation rate for one-dimensional flow of various non-Newtonian fluids.

Propriedades fluidos: massa específica

