2.25

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3 Mass Conservation in Flowing Media

3.1 Mass conservation law in differential form. The physical significance of the divergence of the velocity: $\nabla \cdot \vec{V}$ = the rate of increase of the material's volume, per unit volume.

3.2 Law of mass conservation for a continuum expressed in control volume form. Examples.

3.3 Some special forms of the mass conservation equation for quasi-one-dimensional flow, accounting for the effects of unsteadiness, compressibility, and cross-sectional area variations. Examples.
Limitations to the maximum velocity for incompressibility to be a good approximation.

Read:	Fay, Chapt. 3	or Kundu,	Chapt. 3.6, 3.7, 3.13 Chapt 4.1, 4.2, 4.3.
Problems:	Shapiro & Sonin	3.3, 3.5, 3.7, 3.8	