(b) Derive composite $\frac{1}{3}$rd Simpson's rule. Hence, evaluate

$$\int_0^{0.6} e^{-x^2}\, dx$$

by taking seven ordinates. Tabulate the integrand for these ordinates to four decimal places. 13

(c) Show that for an incompressible steady flow with constant viscosity, the velocity components

$$u(y) = y\frac{U}{h} + \frac{h^2}{2\mu}\left(-\frac{dp}{dx}\right)\frac{y}{h}\left(1-\frac{y}{h}\right),$$

$$v = 0,\ w = 0$$

satisfy the equations of motion, when the body force is neglected. h, U, $\frac{dp}{dx}$ are constants and $p = p(x)$. 13

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