

CORRECTIONS TO THE ARTICLE "A SOLUTION OF DIFFUSION EQUATION WITH NONLINEAR RIGHT SIDE," PRIKLADNOI MEKHANIKI I TEKHNIЧЕСKOI FIZIKI, No. 4, 1969

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The formulas (1.18)-(1.27) are incorrect. The solution of the problem (1.6)-(1.8) is given by the formulas

$$h_1(x, t) = h_0 + \int_0^t x \exp[s(t, \tau)x^2] w_1(\tau) d\tau + \int_0^t [x - \chi(\tau)] \exp[s(t, \tau)[x - \chi(\tau)]^2] w_2(\tau) d\tau$$

$$v(x, t) = F(x, t) + \int_0^t [x - \chi(\tau)] \exp[s(t, \tau)[x - \chi(\tau)]^2] w_3(\tau) d\tau + \int_0^t (x - L) \exp[s(t, \tau)(x - L)^2] w_4(\tau) d\tau$$

$$w_i(t, \tau) = v_i(\tau) (t - \tau)^{-3/2} \quad (i = 1, 2, 3, 4), \quad s(t, \tau) = -[4a^2(t - \tau)]^{-1}$$

where  $v_2(\tau)$ ,  $v_3(\tau)$  are the solutions of the linear Volterra integral equations of the second kind with a kernel of the type  $K_i(t, \tau) = L_i(t, \tau)/\sqrt{t - \tau}$ , the functions  $L_i(t, \tau) = \Phi_i[t, \tau, \chi(t), \chi(\tau)]$  being regular,

$$v_i(t) = \varphi_i(t) + \int_0^t K_i(t, \tau) v_i(\tau) d\tau, \quad K_i(t, \tau) = (-1)^i R(t, \tau) + \frac{1}{4a^2\pi} \int_{\tau}^t \frac{P_i(t) P_i(\sigma)}{[(t - \sigma)(\sigma - \tau)]^{3/2}} \exp\left\{-\frac{1}{4a^2} \left[\frac{P_i^2(t)}{t - \sigma} + \frac{P_i^2(\tau)}{\sigma - \tau}\right]\right\} d\sigma$$

$$(i = 2, 3) \quad R(t, \tau) = \frac{1}{2a\sqrt{\pi}} \frac{[\chi(t) - \chi(\tau)]}{(t - \tau)^{3/2}} \exp\left\{-\frac{[\chi(t) - \chi(\tau)]^2}{4a^2(t - \tau)}\right\}$$

$$P_2(t) = \chi(t), \quad P_3(t) = L - \chi(t)$$

the functions  $v_1(t)$  and  $v_4(t)$  are given by

$$v_1(t) = \varphi_1(t) + \int_0^t K_1(t, \tau) v_2(\tau) d\tau$$

$$v_4(t) = \varphi_4(t) + \int_0^t K_4(t, \tau) v_3(\tau) d\tau, \quad F(x, t), \varphi_i(t) \quad (i = 1, 2, 3, 4), \quad K_i(t, \tau)$$

where  $K_i(t, \tau)$  ( $i = 1, 4$ ) are some functions,  $\chi(t)$  is a function which is unknown in advance and can be found from the nonlinear integral equation (1.16).

The solutions (2.2), (2.3), (2.5), and (2.10)-(2.12) of this problem which were obtained approximately in Sec. 2 do not satisfy the condition  $h(x, 0) = H_2$ , only the conditions (2.3) and (2.11) in which one sets  $l(t) = 0$ .

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