Лабораторный практикум

Постановка задачи

$$c\frac{\partial T}{\partial t} = \frac{1}{\lambda}\frac{\partial}{\partial \lambda}\left(r\lambda\left(T\right)\frac{\partial T}{\partial \lambda}\right) + \frac{1}{\lambda^2}\frac{\partial}{\partial \phi}\left(\lambda(t)\frac{\partial T}{\partial \phi}\right) - q\left(T\left(r,\phi\right)\right)$$

Необходимо найти:

$$T\left(r,\phi\right)$$

Граничные условия ставятся при

$$r = R$$

$$-\lambda\frac{\partial T}{\partial \lambda} = F_p(\phi)$$

$$r = R_1 = -\lambda\frac{\partial T}{\partial \lambda} = \alpha\left(T - T_{oc}\right)$$

$$\phi = 0, \quad \frac{\partial T}{\partial \phi} = 0$$

$$\phi = \pi, \quad \frac{\partial T}{\partial \phi} = 0$$

$$t = 0, \quad T\left(r,\phi,0\right) = T_{\text{нач}}\left(r,\phi\right) = T_o$$