$\cancel{u(x,t) = (x^3+x+1)(3x^4+2x+1)(t^3+3t^2+1)}$

$\cancel{(t^3+3t^2+1)\sin x} = \cancel{u}; \quad u'_x = (t^3+3t^2+1)\cos x; \quad u''_{xx} = (\ldots)\sin x$

решение $\qquad x \in [0,1]$

$$u = (t^3+3t^2+1)(x^4+10x+3);$$

$${}^{C}_{0}D^{\alpha(t)}_{t} u = (\ldots\ldots)(x^4+10x+3); \quad (1)$$

$$u_x = (\ldots\ldots)(4x^3+10); \quad u_{xx} = (\ldots\ldots)(12x^2)$$

$$\Rightarrow f = (1) - 12x^2(t^3+3t^2+1).$$

---

u_x

$$10(t^3+3t^2+1) = 3(t^3+3t^2+1)\underbrace{(3+t^2)}_{\beta_1} - \underbrace{\left(3t^2(t^3+3t^2+1) - (t^3+3t^2+1)\right)}_{\mu_1}$$

К. 2.

$\cancel{-10(t^3+3t^2+1)} =$

$$-14(t^3+3t^2+1) = 14(t^3+3t^2+1)\underbrace{(t-1)}_{\beta_2} - \underbrace{14t(t^3+3t^2+1)}_{\mu_2};$$

$$\boxed{u_0 = x^4+10x+3} \text{ нач}$$

P.S. $${}^{C}_{0}D^{\alpha}_{t} u = \left(\frac{6t^{3-\alpha(t)}}{\Gamma(4-\alpha(t))} + \frac{6t^{2-\alpha(t)}}{\Gamma(3-\alpha(t))}\right) \cdot (x^4+10x+3)$$