. . . . ▸

(1.5) ▸ $\psi(x) = \psi(x_j) + f(x_j, \psi(x_j))\,(x - x_j)$

(1.6) ▸ $\psi'(x) = f(x_j, \psi(x_j))$ $\qquad (j \in (1-N)\,..\,(N-1))$

(1.7) ▸ $\psi(x) = \psi(x_0) + \displaystyle\int_{x_0}^{x} \psi'(s)\,\mathrm{d}s$

(1.8) ▸ $|\psi'(x) - f(x, \psi(x))| \leqslant \varepsilon$ $\qquad \forall x \in [a; b]$

. . . . ▸

(1.10) ▸ $\exists\,\lambda, \mu \geqslant 0 \ :: \ \forall\, x_0, x \in \langle a, b\rangle \ :: \ 0 \leqslant h(x) \leqslant \lambda + \mu \left| \displaystyle\int_{x_0}^{x} h(s)\,\mathrm{d}s \right|$

(1.11) ▸ $h(x) \leqslant \lambda e^{\mu|x - x_0|}$

. . . . ▸

(1.13) ▸ $A = \{(x, y) \mid a < x < b, \varphi_1(x) < y < \varphi_2(x)\}$

(1.14) ▸ $\varphi(x, C) = y(x, \zeta, C)$ $\qquad (\zeta, C) \in \overline{A}$

(1.15) ▸ $y_0 = y(x_0, \zeta, C)$

(2.1) ▸ $M(x, y)\mathrm{d}x + N(x, y)\mathrm{d}y = 0$

. . . . ▸

(2.9) ▸ $N(x, y)U'_x(x, y) - M(x, y)U'_y(x, y) = 0$ $\qquad (x, y) \in G^0$

(2.10) ▸ $U_1(x, y) \equiv \Phi(U(x, y))$

(2.11) ▸ $g_1(x)h_2(y)\,\mathrm{d}x + g_2(x)h_1(y)\,\mathrm{d}y = 0$

(2.12) ▸ $\overline{x_1}^{g} \cap \overline{x_2}^{g} = \varnothing,\ \overline{y_1}^{h} \cap \overline{y_2}^{h} = \varnothing$

. . . . ▸

(2.17) ▸ $U'_x(x, y) = M(x, y),\ U'_y(x, y) = N(x, y)$

(3.1) ▸ $y' = f(x, y)$

(3.2) ▸ $y^{(m)} = f(x, y, y', \dots, y^{(m-1)})$

(3.3) ▸ $y = y_1,\ y' = y_2,\ \dots$

(3.4) ▸ $\begin{cases} y_1' = y_2 \\ y_{m-1}' = y_m \\ y_m' = f(x, y_1, \dots, y_m) \end{cases}$

(3.5) ▸ $y_1 - y_1^0 = f_1(x_0, y_1^0, \dots, y_n^0)(x - x_0)$

(3.6) ▸ $\dfrac{\mathrm{d}x_1}{\mathrm{d}X_1(x_1, \dots, x_n)} = \dots = \dfrac{\mathrm{d}x_{n+1}}{\mathrm{d}X_{n+1}(x_1, \dots, x_{n+1})}$

(3.7) ▸ $f(x, \widehat{y}) - f(x, \widehat{y}) = \sum_j \int_0^1 \dfrac{\partial f(x, u)}{\partial y_j} \mathrm{d}s \cdot (\widehat{y}_j - \widehat{y}_j)$

(3.8) ▸ $\forall\, (x, \widetilde{y}), (x, \widetilde{y}) \in D\ ::\ \|f(x, \widetilde{y}) - f(x, \widetilde{y})\| \leqslant L\|\widetilde{y} - \widetilde{y}\|$

. . . . ▸

(3.10) ▸ $y^{(k+1)}(x) = y^0 + \int_{x_0}^{x} f(s, y^{(k)}(s))\, \mathrm{d}s$

(3.11) ▸ $\|\varphi^{(k)}(x)\| \leqslant \dfrac{M}{L} \dfrac{(L|x - x_0|)^k}{k!}$

(3.12) ▸ $\|y(x) - y^{(k)}(x)\| \leqslant \dfrac{M}{L} \dfrac{(L(\beta - \alpha))^k}{(k+1)!}$

(3.13) ▸ $\forall\, x \in [\alpha, \beta]\ ::\ \|y^{(k)}(x) - y^0\| \leqslant b$

(3.14) ▸ $y' = P(x)y + q(x)$

(3.15) ▸ $y' = f(x, y, \mu)$

. . . . ▸

(3.17) ▸ $$v' = \frac{\partial f(x, y(x, x_0, y^0, \mu), \mu)}{\partial y} v + \frac{\partial f(x, y(x, x_0, y^0, \mu), \mu)}{\partial \mu_j}$$

$$x_0, \frac{\partial y^0(\mu)}{\partial \mu_j}$$

(3.18) ▸ $$u' - \frac{\partial f(x, y(x, x_0, y^0, \mu), \mu)}{\partial y} u$$

$$x_0, e^{(i)}$$

(3.19) ▸ $$\frac{\partial}{\partial x} y(x, x_0, y^0, \mu) \equiv f(x, y(x, x_0, y^0, \mu), \mu)$$

(4.1) ▸ $$y^{(n)} + p_1(x) y^{(n-1)} + \cdots + p_n(x) y = q(x)$$

(5.1) ▸ $$y' = P(x) y, \ P = \{p_{ij}(x)\}_{ij=1}^{n}$$

(5.1^m) ▸ $$\Theta' = P(x)\Theta$$

(5.1^c) ▸ $$y' = Ay$$

(5.1^p) ▸ $$y' = A(x)\, y \qquad A(x+\omega) = A(x)$$

(5.2) ▸ $$y = P(x) z \qquad P(x) = \Phi(x) e^{-Rx}$$

(5.3) ▸ $$z' = Rz$$

(5.4) ▸ $$y' = P(x) y + q(x)$$

(5.5) ▸ $$z' = P(x) z$$

(6.1) ▸ $\dot{x} = X(x)$

(6.2) ▸ $\forall\, \tau \in \mathbb{R} \;::\; \psi = \varphi(t+\tau, t_0+\tau, p) \overset{(a;b)}{\equiv} \varphi(t, t_0, p)$

(6.3) ▸ $\forall\, t_1 \in (\alpha, \beta) \;::\; \varphi(t-t_0, p) \overset{(a;b)}{\equiv} \varphi\big(t-t_1, \varphi(t_1-t_0, p)\big)$

(6.4) ▸ $\dfrac{\mathrm{d}x_2}{\mathrm{d}x_1} = \dfrac{X_2(x)}{X_1(x)}, \ldots, \dfrac{\mathrm{d}x_n}{\mathrm{d}x_1} = \dfrac{X_n(x)}{X_1(x)}$

(6.5) ▸ $\forall\, \varepsilon > 0, T > 0 \;::\; \exists\, t^* > T \;::\; \|\varphi(t^*-t_0, p) - q\| < \varepsilon$

. . . . ▸

(6.7) ▸ $\begin{cases} \dot{x}_1 = -x_2 + x_1(x_1^2 + x_2^2 - 1) \\ \dot{x}_2 = x_1 + x_2(x_1^2 + x_2^2 - 1) \end{cases}$

(6.8) ▸ $\dot{r} = r(r^2 - 1),\; \dot{\varphi} = 1$

(6.9) ▸ $\begin{aligned} r(t, r_0, \varphi_0) &= (1 - c_0 e^{2t})^{-1/2} \\ \varphi(t, r_0, \varphi_0) &= \varphi_0 + t \end{aligned}$

(6.10) ▸ $\dot{y} = Ay$ $\qquad A \in M_{2,2}(\mathbb{R})$

. . . . ▸

(6.12) ▸ $\dot{z} = Jz$

(6.13) ▸ $z_1(t) = c_1 e^{\lambda_1 t}, z_2(t) = c_2 e^{\lambda_2 t}$

(6.14) ▸ $\dot{z} = Jz,\; J = \begin{pmatrix} \lambda_1 & 0 \\ 0 & \overline{\lambda}_1 \end{pmatrix} \Rightarrow \begin{cases} \dot{z}_1 = (\alpha + i\beta) z_1 \\ \dot{z}_2 = (\alpha - i\beta) z_2 \end{cases}$ $\qquad \beta > 0$

(6.15) ▸ $z = Cu,\; C = \begin{pmatrix} 1 & i \\ 1 & -i \end{pmatrix}$

(6.16) ▸ $\dot{u} = J_R u,\; J_R = \begin{pmatrix} \alpha & -\beta \\ \beta & \alpha \end{pmatrix}$

(6.17) ▸ $y = SCu$

(*) ▸ $\dot{r} = \alpha r,\ \dot{\varphi} = \beta$ (После полярной замены)

(7.1) ▸ $\dot{x} = f(t, x)$

(7.2) ▸ $\dot{y} = g(t, y)$

(7.3) ▸ $\dot{y} = P(t)y + Y(t, y)$

(7.4) ▸ $\dot{y} = P(t)y$

(7.5) ▸ $\dot{y} = Ay + Y(t, y)$ $\dfrac{\|Y(t, y)\|}{\|y\|} \overset{[t_0;\infty)}{\rightrightarrows} 0$

(7.6) ▸ $\|y(t)\| \leqslant n \left\|e^{A(t-t_0)}\right\| \|y^0\| + \int_{t_0}^{t} n \left\|e^{A(t-s)}\right\| \|Y(s, y(s)\| \,\mathrm{d}s$

(7.7) ▸ $\|y(t)\| \leqslant nK\|y^0\| \, e^{-(\lambda-\varepsilon_0)\,(t-t_0)}$

.... ▸

(7.11) ▸ $\dot{x} = f(t, x)\ f \in C(G)\ f \in \mathrm{Lip}_x^{\mathrm{loc}}(G)$

(7.12) ▸ $\dfrac{\mathrm{d}V(t, x(t))}{\mathrm{d}t} \equiv \mathrm{D}V(t, x(t))$

(8.1) ▸ $\dot{x} = Ax + X(x)$

(8.2) ▸ $x = Sy + f(y)$

(8.3) ▸ $\dot{y} = By + Y(y)$

(8.4) ▸ $B = S^{-1}AS$

(8.5) ▸ $\dfrac{\partial f}{\partial y}By - Af + SY = X(Sy + f) - \dfrac{\partial f}{\partial y}Y$

(8.6) ▸ $x = Sz$

(8.7) ▸ $z = y + h(y)$

(8.8) ▸ $\dot{z} = Jz + Z(z)$

(8.9) ▸ $\dot{z}_i = \lambda_i z_i + \sigma_i z_{i-1} + Z_i(z)$

(8.10) ▸ $z_i = y_i + h_i(y)$

(8.11) ▸ $\dot{y}_i = \lambda_i y_i + \sigma_i y_{i-1} + Y_i(y)$

* ▸ $|p+q| = |p| + |q|$ ⟨`:set aflame`⟩

(8.12) ▸
$$\left(\sum_j p_j\lambda_j - \lambda_i\right) h_i^{(p)} + Y_i^{(p)} = \left\{Z_i(y+h)\right\}^{(p)} + \sigma_i h_{i-1}^{(p)} -$$
$$-\sum_j \sigma_j(p_j+1)h_j^{(p-e_{j-1}+e_j)} - \sum_j \sum_{|q|=2}^{|p|-1} (p_j - q_j + 1) h_i^{(p-q+e_j)} Y_j^{(q)}$$

(8.13) ▸ $\delta_{pi} h_i^{(p)} + Y_i^{(p)} = \widetilde{Y}_i^{(p)}$

(8.14) ▸ $\delta_{pi} = \langle p - e_i, \lambda\rangle$

(8.15) ▸ $h_i^{(p)} = \delta_{pi}^{-1}(\widetilde{Y}_i^{(p)} - Y_i^{(p)})$

(8.16) ▸ $Y^{(p)} = \widetilde{Y}_i^{(p)}$ $\delta_{pi} = 0$

(8.17) ▸ $\dot{x} = Ax + X(x),\ \lambda_{1,2} = \pm i\beta$ $\beta > 0, A, X\colon \cdot \to \mathbb{R}$

(8.18) ▸ $\dot{z} = Jz + Z(z),\ J = \begin{pmatrix} i\beta & 0 \\ 0 & -i\beta \end{pmatrix}$

(8.19) ▸ $z_2 = \overline{z}_1,\ Z_2(z_1, z_2) = \overline{Z}_1(z_2, z_1) \Leftrightarrow Z_2^{(p_1,p_2)} = \overline{Z}_1^{(p_2,p_1)}$

(8.20) ▸ $\dot{u} = J_R u + U(u),\ J = \begin{pmatrix} 0 & -\beta \\ \beta & 0 \end{pmatrix}$ $\alpha = 0$

(8.21) ▸ $\dot{y} = Jy + Y$ $\beta > 0$

(8.22) ▸ $Y_1 = \sum_{r=1}^{\infty} Y_1^{(r+1,r)} y_1^{r+1} y_2^r, \quad Y_2 = \sum_{r=1}^{\infty} Y_2^{(r,r+1)} y_1^r y_2^{r+1}$

(8.23) ▸ $y_2 = \overline{y}_1,\, Y_2 = \overline{Y}_1$

(8.24) ▸ $\dot{y}_1 = i\beta y_1 + Y_1^0(y_1, y_2)$ $\qquad y_2 = \overline{y}_1$

(8.25) ▸ HET

(8.26) ▸ $z = y + h(y),\; h_1 = \overline{h}_2$ $\qquad y_1 = \overline{y}_2$

(8.27) ▸ $$i\beta(p_1 - p_2 - 1)h_1^{(p_1,p_2)} + \left(Y_1^0\right)^{(p_1,p_2)} = \{Z_1(y+h)\}^{(p_1,p_2)} - \Phi_1$$
$$\Phi_1^{(p)} = \sum_{r=1}^{p^*} h^{(p_1-r,p_2-r)} \left((p_1+p_2-2r)\operatorname{Re} Y_1^{(r+1,r)} + i(p_1-p_2)\operatorname{Im} Y_1^{(r+1,r)}\right)$$
$$p^* = \min\left\{p_1, p_2, \frac{p_1+p_2}{2} - 1\right\}$$

(8.28) ▸ $$\Phi_1^{(p)} = i(p_2 - p_1)\sum_{r=1}^{p^*} h_1(p_1 - r, p_2 - r)\operatorname{Im} Y_1^{(r+1,r)}$$

(8.29) ▸ $$i\beta(p_1 - p_2 - 1)h_1^{(p_1,p_2)} = \{Z_1(y+h)\}^{(p)} - i(p_1-p_2)\sum_{r=1}^{p^*} h_1^{(p_1-r,p_2-r)}\operatorname{Im} Y_1^{(r+1,r)}$$

(8.30) ▸ $Y_1^{(s+1,s)} = \{Z_1(y+h)\}^{(s+1,s)}$ $\qquad p_2 = p_1 - 1 = s$

(8.31) ▸ $\varphi \prec \beta_* \eta V(\eta, \varphi) + 2\beta_* \varphi^2$

(8.32) ▸ $\psi = \beta_* \eta V(\eta, \psi) + 2\beta_* \psi^2$

(8.33) ▸ $\dot{y}_1 = i y_1 A(y_1 \overline{y_1})$

(8.34) ▸ $$y(t, y^0) = \begin{pmatrix} y_1^0 e^{iA(y^0)t} \\ \overline{y_1^0}\, e^{-iA(y^0)t} \end{pmatrix}$$

(8.35) ▸ $z_1(t, z^0) = y_1^0 e^{iA(y^0)t} + h_0(t, y^0),\; z_2 = \overline{z_1}$

(8.36) ▸ $z_1 = y_1 + h_1(y_1, y_2),\; z_2 = y_2 + \overline{h_1}(y_2, y_1)$ $\qquad h \in \mathbb{R}[y_1, y_2]$

(8.37) ▸ $\dot{y}_1 = i\beta y_1 + Y_1^0(y_1, y_2) + \mathcal{Y}_1(y_1, y_2),\; y_2 = \overline{y_1}$

(8.38) ▸ $\dot{r} = r^{2p_0+1}(a + R(r, \varphi)),\; \dot{\varphi} = \beta + \Phi(r, \varphi)$