Expression of corresponding continued fraction in closed form

$$e_{i,j+1} = a_j (y_i - x_j) e_{i,j} \qquad i = \mathcal{J}_1^n \quad j = \mathcal{J}_1^{n-1}$$

$$e_{i,j} = p_{m+i+j-2}$$

$$p_{m+i+j-1} = a_j^{(m)}(y_i^{(m)} - x_j^{(m)})\, p_{m+i+j-2}$$

$$p_r = B_r p_{r-1} + A_r p_{r-2} \qquad \frac{p_{r-2}}{p_{r-1}} = \left\{ \frac{1}{\frac{p_{r-1}}{p_r}} - B_r \right\} \Big/ A_r$$

$$= \left\{ B_r + A_r \frac{p_{r-2}}{p_{r-1}} \right\} p_{r-1}$$

$$p_{m+i+j-1} = \left\{ B_{m+i+j-1} + A_{m+i+j-1} \frac{p_{m+i+j-3}}{p_{m+i+j-2}} \right\} p_{m+i+j-2}$$

$$a_j^{(m)}(y_i^{(m)} - x_j^{(m)}) = B_{m+i+j-1} + A_{m+i+j-1} \frac{p_{m+i+j-3}}{p_{m+i+j-2}}$$

$$A_{m+i+j-1} \frac{p_{m+i+j-3}}{p_{m+i+j-2}} =$$

$$\frac{p_{m+i+j-1}}{p_{m+i+j-2}} = B_{m+i+j-1} + \frac{A_{m+i+j-1}}{\frac{p_{m+i+j-2}}{p_{m+i+j-3}}}$$

$$a_j^{(m)}(y_i^{(m)} - x_j^{(m)}) = B_{m+i+j-1} + \frac{A_{m+i+j-1}}{a_{j}^{(m)}(y_{i+1}^{(m)} - x_j^{(m)})}$$

also $= \quad " \quad \dfrac{A_{m+i+j-1}}{a_{i+1}^{(m)}(y_i^{(m)} - x_{i+1}^{(m)})}$

must have $a_j^{(m+1)}(y_{i+1} - x_j) = a_{j+1}(y_i - x_{j+1})$

if $\{a_j\}$ $\{x_j\}$ prescribed, y_1 also then $y_2 \cdots y_n$ fixed

drop superscripts ~~class~~ call $B_{m+i+j-1}$ B_{i+j-1}

$i=1$

$$a_1(y_1 - x_1) = B_1 + \frac{A_1}{a_1(y_2 - x_1)}$$

$$a_2(y_1 - x_2) = B_2 + \frac{A_2}{a_2(y_2 - x_2)}$$

$$a_3(y_1 - x_3) = B_3 + \frac{A_3}{a_3(y_2 - x_3)}$$

$$\cdots$$

$$a_n(y_1 - x_n) = B_n + \frac{A_n}{a_n(y_2 - x_n)}$$

$i=2$

$$a_1(y_2 - x_1) = B_2 + \frac{A_2}{a_1(y_3 - x_1)}$$

$$a_2(y_2 - x_2) = B_3 + \frac{A_3}{a_2(y_3 - x_2)}$$

$$a_n(y_2 - x_n) = B_{n+1} + \frac{A_{n+1}}{a_n(y_3 - x_n)}$$

$i=n-1$

$$a_1(y_{n-1} - x_1) = B_{n-1} + \frac{A_{n-1}}{a_1(y_n - x_1)}$$

$$a_2(y_{n-1} - x_2) = B_n + \frac{A_n}{a_1(y_n - x_1)}$$

$$a_n(y_{n-1} - x_n) = B_{2n-2} + A_{2n-2} / a_n(y_n - x_n)$$

suppose all A's zero

$$a_j(y_{r-j+1} - x_j) = B_r \qquad r = 1, \ldots, 2n-2 \quad j = 1 \ \min\{n-1, r\}$$

$$a_{j+1}(y_{r-j+1} - x_{j+1}) = B_r \qquad a_j(y_{r-j+2} - x_j) = B_{r+1}$$

$$a_{j+1}y_{r-j} - a_j y_{r-j+1} \qquad \frac{B_{r+1}}{B_r} = \frac{y_{r-j+2} - x_j}{y_{r-j+1} - x_j}$$

$$\begin{vmatrix} a_j & y_{r-j} - x_{j+1} \\ a_{j+1} & y_{r-j+1} - x_j \end{vmatrix} = 0 \qquad y \text{ const means } B \text{ const}$$

$$y_{r-j+2} - x_j = C_r(y_{r-j+1} - x_j)$$

$$\begin{vmatrix} a_j & y_{r-j} - x_{j+1} \\ a_{j+1} & y_{r-j+1} - x_j \end{vmatrix} \qquad \begin{vmatrix} \frac{1}{a_j} & \frac{1}{y_{r-j+1} - x_{j+1}} \\ \frac{1}{a_{j+1}} & \frac{1}{y_{r-j+2} - x_j} \end{vmatrix}$$

$$\begin{vmatrix} a_{j+1} & y_{r-j-1} - x_{j+2} \\ a_{j+2} & y_{r-j} - x_{j+1} \end{vmatrix} \qquad \begin{vmatrix} \frac{1}{a_{j+1}} & \frac{1}{y_{r-j} - x_{j+2}} \\ \frac{1}{a_{j+2}} & \frac{1}{y_{r-j+1} - x_{j+1}} \end{vmatrix}$$

inadmissible

$$y_{r-j+2} - C_r y_{r-j+1} = x_j(1 - C_r) \qquad y \text{ const} = c$$

$$c - x_j = X_j$$

$$\begin{vmatrix} a_j & X_{j+1} \\ a_{j+1} & X_j \end{vmatrix} \qquad \begin{vmatrix} \frac{1}{a_j} & \frac{1}{X_{j+1}} \\ \frac{1}{a_{j+1}} & \frac{1}{X_j} \end{vmatrix} \qquad \begin{vmatrix} X_{j+1} & a_j \\ X_j & a_{j+1} \end{vmatrix} \frac{1}{a_j a_{j+1} X_j X_{j+1}}$$

$$\begin{vmatrix} a_{j+1} & X_{j+2} \\ a_{j+1} & X_{j+1} \end{vmatrix} \qquad \begin{vmatrix} \frac{1}{a_{j+1}} & \frac{1}{X_{j+2}} \\ \frac{1}{a_{j+2}} & \frac{1}{X_{j+1}} \end{vmatrix} \qquad \begin{vmatrix} X_{j+2} & a_{j+1} \\ X_{j+1} & a_{j+2} \end{vmatrix} \frac{1}{a_{j+1} a_{j+2} X_{j+1} X_{j+2}}$$

$$a_j(y_i - x_j) = B_{i+j-1} + \frac{A_{i+j-1}}{a_j(y_{i+1} - x_j)} \qquad i = \overline{1,n} \quad j = \overline{1,n-1}$$

$i+j-1 = r \quad i = r-j+1$ $\qquad$ $i+j-1 \quad 1 \quad 2n-2$

$$a_j(y_{r-j+1} - x_j) = B_r + \frac{A_r}{a_j(y_{r-j+2} - x_j)}$$

$r = 1, \dots, 2n-2$

$j = 1 \ \min\max \begin{Bmatrix} n-1 \\ r+[illegible] \end{Bmatrix}$

$r-j+2 \geq 1$

$j \leq r+2-1$
$= r+1$

. . . . .
. . . . .
. . . . .

$$a_1(y_r - x_1) \quad \frac{1}{a_1(y_{r+1} - x_1} \quad 1$$

$$a_2(y_r - x_2) \quad \frac{1}{a}$$

$j = 1$

$\min\max \begin{Bmatrix} n-3 \\ r-3 \end{Bmatrix}$

$$\begin{vmatrix} a_j(y_{r-j+1} - x_j) & \frac{1}{a_j(y_{r-j+2} - x_j)} & 1 \\ a_{j+1}(y_{r-j} - x_{j+1}) & \frac{1}{a_{j+1}(y_{r-j+1} - x_{j+1})} & 1 \\ a_{j+2}(y_{r-j-1} - x_{j+2}) & \frac{1}{a_{j+2}(y_{r-j} - x_{j+2})} & 1 \end{vmatrix} = 0$$

$a_2(y_1 - x_2) = a_1(y_2 - x_1)$

$a_3(y_1 - x_3) = a_2(y_2 - x_2) = a_1(y_3 - x_1)$

$a_4(y_1 - x_4) = a_3(y_3 -$

$y_i =$ ~~[illegible]~~ $l + mi \qquad x_i = n + pi$

$l + m(r-j+2)$ ~~$= C_r$~~ $- n + pj =$ ~~C_r~~ $\{$

$= C_r \{ \qquad x_j\{1 - \frac{1}{\lambda}\}$

$$\frac{y_{r-j+2} - x_j}{y_{r-j+3} - x_j} = \frac{y_{r-j+1} - x_j}{y_{r-j+2} - x_j} = A\{1 - \frac{1}{\lambda}\} + B\{$$

$$\frac{L + M(r-j+2) - N - P_j}{L + M(r-j+3) - N - P_j}$$

$y = L + Mi$

means

$$\frac{y_{r-j+3} - y_{r-j+2}}{y_{r-j+2} - x_j} = \frac{y_{r-j+2} - y_{r-j+1}}{y_{r-j+1} - x_j} \qquad y_{r-j+2} = y_{r-j+1}$$

$y_i = A + B\lambda^i$

~~λ [illegible]~~ $=$ ~~[illegible]~~

$$\frac{A}{\lambda} + \frac{B}{\lambda}\lambda^{r-j+2} - \frac{x_j}{\lambda} = A + B\lambda^{r-j+1} - x_j$$

$$y_{r-j+1} y_{r-j+3} - y_{r-j+1} y_{r-j+2} - x_j \{ y_{r-j+3} - y_{r-j+2} \}$$

$$= y_{r-j+2}^2 - y_{r-j+2} y_{r-j+1} - x_j \{ y_{r-j+2} - y_{r-j+1} \}$$

$$\begin{vmatrix} y_{r-j+1} & y_{r-j+2} \\ y_{r-j+2} & y_{r-j+3} \end{vmatrix} + x_j \begin{vmatrix} 1 & 1 \\ x_{r-j+3} - x_{r-j+2} & x_{r-j+2} - x_{r-j+1} \end{vmatrix}$$

y_{r-j+1} $\quad y_{r-j+2}$ $\qquad y_i = A + B\lambda^i$

$y_{r-j+2} - y_{r-j+1}$ $\quad y_{r-j}$ $\qquad$ means $x_i = A$

$$\begin{vmatrix} a_j & B\lambda^{r-j} \\ a_{j+1} & B\lambda^{r-j+1} \end{vmatrix} = 0 \qquad \begin{matrix} a_j & 1 \\ a_{j+1} & \lambda \end{matrix} \qquad \begin{matrix} a_j = D\lambda^i \\ a_j = C\lambda^i \end{matrix}$$

$$y_i = A + B\phi^i \qquad x_i = C + D\psi^i$$

$$\begin{vmatrix} a_j & A - C + B\phi^{r-j} - D\psi^{j+1} \\ a_{j+1} & A - C + B\phi^{r-j+1} - D\psi^{j} \end{vmatrix} \quad \begin{vmatrix} \frac{1}{a_j} & \frac{1}{A - C + B\phi^{r-j+1} -} \\ \frac{1}{a_{j+1}} & \frac{1}{} \end{vmatrix}$$

take $A = C$ $\phi = \psi^{-1}$

$$\begin{vmatrix} a_j & B\psi^{j-r} - D\psi^{j+1} \\ a_{j+1} & B\psi^{j-r-1} - D\psi^{j} \end{vmatrix} \quad \begin{vmatrix} \frac{1}{a_j} & \frac{1}{B\psi^{j-r-1} - D\psi^{j+1}} \\ \frac{1}{a_{j+1}} & \frac{1}{B\psi^{j-r-2} - D\psi^{j}} \end{vmatrix}$$

$$\begin{vmatrix} a_{j+1} & B\phi\psi^{j-r+1} - D\psi^{j+2} \\ a_{j+2} & B\psi^{j-r} - D\psi^{j+1} \end{vmatrix} \quad \begin{vmatrix} \frac{1}{a_{j+1}} & \frac{1}{B\psi^{j-r} - D\psi^{j+2}} \\ \frac{1}{a_{j+2}} & \frac{1}{B\psi^{j-r-1} - D\psi^{j+1}} \end{vmatrix}$$

$\psi^j \{B\psi^{-r} - D\psi\}$ $\qquad \frac{1}{\psi^j} \frac{1}{B\psi^{-r-1} - D\psi}$ $\qquad \frac{1}{\psi}$

$\psi^j \{B\psi^{-r-1} - D\}$ $\qquad \frac{1}{\psi^j} \frac{1}{B\psi^{-r-2} - D}$

$\psi^j \{B\psi^{-r+1} - D\psi^2\}$ $\qquad \frac{1}{\psi^j} \frac{1}{B\psi^{-r} - D\psi^2}$ $\qquad \frac{1}{\psi^2}$

$\psi^j \{B\psi^{-r} - D\psi\}$ $\qquad \frac{1}{B\psi^{-r-1} - D\psi}$ $\qquad \frac{1}{\psi}$

$$\begin{vmatrix} a_j & \psi \\ a_{j+1} & 1 \end{vmatrix} \quad \begin{vmatrix} \frac{1}{a_j} & \frac{1}{\psi} \\ \frac{1}{a_{j+1}} & 1 \end{vmatrix} \qquad a_j = E\psi^j$$

$$\begin{vmatrix} a_{j+1} & \psi^2 \\ a_{j+2} & \psi \end{vmatrix} \quad \begin{vmatrix} \frac{1}{a_{j+1}} & \frac{1}{\psi^2} \\ \frac{1}{a_{j+2}} & \frac{1}{\psi} \end{vmatrix}$$

$$\begin{vmatrix} \psi & a_j \\ 1 & a_{j+1} \end{vmatrix} \frac{1}{\psi a_j a_{j+1}}$$

$$\frac{1}{a_{j+2}} = \frac{1}{\psi^2 a_{j+2}} \qquad \begin{vmatrix} \psi^2 & a_{j+1} \\ \psi & a_{j+2} \end{vmatrix} \frac{1}{\psi^3 a_{j+1} a_{j+2}}$$

alternative solution appears to be

a_1, a_2 arbitrary. ~~$a_j = a_1$~~ $a_{2j+1} = a_1\psi^{-2j}$

$a_{2j+2} = a_2\psi^{-2j}$

$y_i = A + B\psi^{-i} \quad x_i = A + D\psi^{i} \quad a_i = E\psi^{-i}$

$y_i = A + B\phi^{i} \quad x_i = A + D\phi^{-i} \quad a_i = E\phi^{i}$

$$E\phi^{j}\left\{A + B\phi^{r-j+1} - A - D\phi^{-j}\right\} =$$

$$\mathcal{B}_r + \frac{A_r}{E\phi^{j}\left\{A + B\phi^{r-j+2} - A - D\phi^{-j}\right\}}$$

$$E\left\{B\phi^{r+1} - D\right\} = \mathcal{B}_r + \frac{A_r}{E\left\{B\phi^{r+2} - D\right\}}$$

$\mathcal{B} = D \quad \phi \to 1 \quad EB = H$

$$H(r+1) = \mathcal{B}_r + \frac{A_r}{H(r+2)} \qquad \mathcal{B} = \phi^{\beta} \cdot M$$

$\phi = \eta^{K}$

$$H\{\beta + r + 1\} = \mathcal{B}_r + \frac{A_r}{H\{\beta + r + 2\}}$$

$\phi H \eta^{\beta} \eta^{rK + 2K} - H$

$H \eta^{\beta} \eta^{rK + K} - H$

$\beta + rK + 2K$

$A_r = H\{\alpha + r + 2\} \quad \mathcal{B}_r = H(\alpha + r + 1) - 1$

$= H(\alpha + r + 2) - H - 1$

$= A_r - H - 1 \qquad \beta + rK + K$

$$\mathcal{B}_r = \frac{-x + 2r + \alpha - 1}{r} \qquad A_r = -\frac{(r + \alpha - 1)}{r} \quad H\{\beta + r +$$

$$H(\beta + r + 1) = \frac{-x + 2r + \alpha - 1}{r} + -\frac{(r + \alpha - 1)}{r H(\beta + r + 2)}$$

$$B\,P_n(z) = \frac{p_n}{n!} \quad n P_n = (2n-1) z P_{n-1} + (n-1) P_{n-2}$$

$$n \frac{p_n}{n!} = \frac{(2n-1)z}{(n-1)!} p_{n-1} + \frac{(n-1)}{(n-2)!} p_{n-2}$$

$$p_n = (2n-1) z\, p_{n-1} + (n-1)^2 p_{n-2}$$

$$H(\beta + \kappa + r\kappa) = B_r + \frac{A_r}{H(\beta + 2\kappa + r\kappa)}$$

$$A_r = (r-1)^2 \quad B_r = (2r-1) z$$

$$H(\beta + r + 1) = (2r-1) z + \frac{(r-1)^2}{H(\beta + r + 2)}$$

$\beta = -3 \quad H = 1$

$Hr + H(\beta - 2)$

$= Kr - K$

$\beta = -3$

$$H(r-2) = (2r-1) z + \frac{(r-1)}{H}$$

$$H = 2z + \frac{1}{H} \qquad -H = z$$

$$-2H = -z - \frac{1}{H} \qquad -z = 2z + -\frac{1}{z}$$

$$A_r = \frac{r-1}{r} \quad B_r = \frac{(2r-1)z}{r} \qquad y_i = \frac{A i + B}{C i + D}$$

$$H(r-2) = \sout{(2r-1)z} + \frac{1}{H}$$

~~$H = 2z \quad -2H - z + \frac{1}{H} = 0$~~

$$a_j (y_{r-j+1} - x_j) = \frac{\alpha r + \beta}{\delta r + \varepsilon}$$

$$a_j \left\{ \frac{A(r-j+1) + B}{C(r-j+1) + D} - \frac{P j + Q}{S j + T} \right\} ?$$

$$c_m = \prod_{\tau=0}^{m-1} \frac{A-\alpha^{m\tau}}{C-\gamma^{m\tau}} \quad \Big\| \quad \frac{1}{p_i - q_{j+1}} = a_j(y_i - x_j)\frac{1}{p_i - q_j}$$

$$e_{i,j} = c_{m+i+j-2}$$

$$\prod_{\tau=0}^{m+i+j-1} \left\{ \frac{A-\alpha^\tau}{C-\gamma^\tau} \right\} = a_j(y_i - x_j) \prod_{\tau=0}^{m+i+j-2} \left\{ \frac{A-\alpha^\tau}{C-\gamma^\tau} \right\}$$

$$\frac{A-\alpha^{m+i+j-1}}{C-\gamma^{m+i+j-1}} = a_j(y_i - x_j) \qquad i = \mathcal{J}_1^n \quad j = \mathcal{J}_1^{n-1}$$

$$A = \alpha^X \quad C = \gamma^Y \quad \alpha, \gamma \to 1$$

$$\frac{X-m-i-j+1}{Y-m-i-j+1} \qquad \begin{aligned} X-m+1 &= h \\ Y-m+1 &= k \end{aligned}$$

$$\frac{h-i-j}{k-i-j} = a_j(y_i - x_j) = a_{j+1}(y_{i-1} - x_{j+1})$$

$$A-\alpha^{m+i+j-1} = \{C-\gamma^{m+i+j-1}\}(a_j y_i - a_j x_j)$$

$$= C a_j y_i - C a_j x_j - \gamma^{m+i+j-1} a_j y_i + \gamma^{m+i+j-1} a_j x_j$$

$$h-i-j = (k-i-j)\,a_j(y_i - x_j) \quad \Big\| \quad \begin{aligned} &k a_j y_i - k a_j x_j \\ &- i a_j y_i + i a_j x_j \\ &- j a_j y_i + j a_j x_j \end{aligned}$$

denominator form alone

$$1 = (k-i-j)\,a_j(y_i - x_j)$$

Gegenbauer polynomials $C_n^\nu(t)$

$$B_r = \frac{2(\nu+r-1)t}{r} \quad A_r = -\frac{2\nu+r-2}{r}$$

$$H\{\beta+r+1\} = \frac{2(\nu+r-1)t}{r} - \frac{2\nu+r-2}{rH\{\beta+r-2\}}$$

$\beta = 2\nu$

$$H\{2\nu+r+1\} = \frac{2(\nu+r-1)t}{r} - \frac{1}{rH}.$$

$$c_n^\nu(t) = \frac{1}{n!}C_n^\nu(t)$$

$$n\frac{1}{n!}c_n^\nu(t) = \frac{2(\nu+n-1)t}{(n-1)!}c_{n-1}^\nu(t) - \frac{2\nu+n-2}{(n-2)!}c_{n-2}^\nu(t)$$

$$B_r = 2(\nu+r-1)t \quad A_r = -(r-1)(2\nu+r-2)$$

$$H\{\beta+r+1\} = 2(\nu+r-1)t - \frac{(r-1)(2\nu+r-2)}{H\{\beta+r-2\}}$$

$\beta = 2\nu$

$$H\{2\nu+r+1\} = 2(\nu+r-1)t - \frac{r-1}{H}.$$

$$H = 2t - \frac{1}{H} \quad H(2\nu+1) = (2\nu-1)t + \frac{1}{H}$$

$$2H(\nu+1) = t - 2\nu t \quad H = t(1-2\nu)/\{2(\nu+1)\}$$

$$\frac{t(1-2\nu)}{2(\nu+1)} = 2t - \frac{2(\nu+1)}{t(1-2\nu)}$$

$$\frac{t(1-3\nu)}{4(\nu+1)} = \frac{t^2(1-3\nu)-2\nu-1}{t(1-2\nu)}$$

$$t^2(1-2\nu)^2 = 4(\nu+1)(1-2\nu)t^2 - 4(\nu+1)^2$$

$$t^2(1-2\nu)\{1-2\nu-4\nu-4\} = -4(\nu+1)^2$$

$$t^2 = \frac{4(\nu+1)^2}{3(1-2\nu)(1+2\nu)} = \frac{4}{3}\frac{(\nu+1)^2}{1-4\nu^2}$$

$$\beta=1 \qquad H(r+2) = 2(\nu+r-1)t - \frac{(2\nu+r-2)}{H}$$

$$H = 2t - \frac{1}{H} \qquad 2H = 2(\nu-1)t - \frac{2(\nu-1)}{H}$$

$$= 2(\nu-1)\{t - \frac{1}{H}\}$$

$$H = 2t - \frac{1}{H}; \quad \frac{H}{\nu-1} = t - \frac{1}{H}$$

$$H\{1 - \frac{1}{\nu-1}\} = t \qquad H = \frac{t(\nu-1)}{\nu-2}$$

$$\frac{t(\nu-1)}{\nu-2} = 2t - \frac{\nu-2}{t(\nu-1)} \qquad t^2(\nu-1)^2 = \{2t^2(\nu-1) - \nu+2\}(\nu-2)$$

$$t^2\{\nu-1\}\{\nu-1-2\nu+4\} = -(\nu-2)^2$$

$$t^2 = \frac{(\nu-2)^2}{(\nu-1)(\nu-3)}$$

Hermite

$B_r = 2x \quad A_r = -2(r-1)$

$H_r = 2x H_{r-1} - 2(r-1) H_{r-2}$

$H_r = \frac{1}{r!} h_r$

$\frac{1}{r!} h_r = 2x \frac{1}{(r-1)!} h_{r-1} - \frac{2(r-1)}{(r-2)!} h_{r-2}$

$$\begin{cases} H_r = r!\, h_r \\ r!\, h_r = 2x\,(r-1)!\, h_{r-1} - 2(r-1)(r-2)!\, h_{r-2} \\ h_r = \frac{2x}{r} h_{r-1} - \frac{2}{r} h_{r-2} \end{cases}$$

$B_r = 2xr \quad A_r = -2(r-1)^2 r$

$$H_{m,r}\, H_{m+2,r} - H_{m+1,r}^2 = H_{m+2,r-1}\, H_{m,r+1}$$

$$H_{m,r} = \left\{\prod_{\tau=0}^{r} p_{m+\tau}\right\} h_{m,r}$$

$$\prod_{\tau=0}^{r} p_{m+\tau} \prod_{\tau=2}^{r+2} p_{m+\tau}\; h_{m,r}\, h_{m+2,r} - \left\{\prod_{\tau=1}^{r+1} p_{m+\tau}\right\}^2 h_{m+1,r}^2$$

$$= \prod_{\tau=2}^{r+1} p_{m+\tau} \prod_{\tau=0}^{r+1} p_{m+\tau}\; h_{m+2,r-1}\, h_{m,r+1}$$

$$m\ \overbrace{m+1 \cdots m+r}\ \overbrace{m+2\ m+3 \cdots}\ m+r+2$$

$$\overbrace{m+1, m+2\ \cdot\ , m+r+1}\quad m+1. \overbrace{m+2 \ldots m+r+1}$$

$$\overbrace{m+2, m+3 \cdots\ , m+r\ m+r+1}\ m\ \overbrace{m+1.}\ m+r+1$$

$$p_m\, p_{m+r+2}\, h_{m,r}\, h_{m+2,r} - p_{m+1} p_{m+r+1}\, h_{m+1,r}^2$$

$$= p_m\, p_{m+r+1}\, h_{m+2,r-1}\, h_{m,r+1}$$

$$\sqrt{p_{m+r}}\, h_{m,r} = k_{m,r}$$

$$\frac{p_m}{\sqrt{p_{m+r}}} \cdot \sqrt{p_{m+r+2}}\; k_{m,r}\, k_{m+2,r} - p_{m+1}\, k_{m+1,r}^2$$

$$= p_m\, k_{m+2,r-1}\, k_{m,r+1}$$

$$p_{m+1} = q_m\, p_m$$

$$q_{m+r+1}\, h_{m,r}\, h_{m+2,r} - q_m\, h_{m+1,r}^2 = h_{m+2,r-1}\, h_{m,r+1}$$

$$t_m = \prod_{\nu=0}^{m-1} \frac{(a+\nu)}{(b+\nu)}$$

$$\frac{a+m}{b+m} = x_m$$

$$t_m \quad \frac{a+m}{b+m} t_m$$

$$\prod_{\nu=0}^{r} t_\nu \quad \Big| \quad \frac{1}{\frac{a+m}{b+m}} \quad \frac{1}{\frac{a+m+1}{b+m+1}} \quad \frac{1}{\frac{a+m+2}{a+m+2}} \qquad \frac{\Gamma(\gamma)\Gamma(\alpha+m)}{\Gamma(\alpha)\Gamma(\beta+m)}$$

$$y = \alpha+m \qquad x+y = \gamma+m \qquad x = \gamma-\alpha$$

$$\Big\{\prod_{\nu=0}^{r} t_{m+\nu}\Big\} \prod_{\nu=1}^{r} (\qquad \frac{\Gamma(\gamma)\Gamma(\alpha+m)}{\Gamma(\alpha)\Gamma(\gamma+m)}$$

$$\frac{1}{\frac{a+m}{b+m}} \quad \frac{1}{\frac{a+m+1}{b+m+1}} \quad \frac{1}{\frac{a+m+r}{b+m+r}} \qquad = \frac{\Gamma(\gamma)}{\Gamma(\alpha)\,\Gamma(\gamma-\alpha)} \cdot B(\gamma-\alpha, \alpha+m)$$

$$\frac{a+m}{b+m} \qquad \frac{1}{x_m} \quad \frac{1}{x_{m+1}} \quad \frac{1}{x_{m+r}} \qquad = \frac{\Gamma(\gamma)}{\Gamma(\alpha)\Gamma(\gamma-\alpha)} \int_0^1 t^{\gamma-\alpha}(1-t)^{\alpha+m-1}\,dt$$

$$\frac{\alpha+m+i+j}{\gamma+m+i+j} \cdot \frac{c-d+i+j+1}{c-d+i+j} \quad x_m x_{m+1} \quad x_{m+1} x_{m+2} \quad x_{m+r} x_{m+r+1}$$

$$x_m x_{m+1} x_{m+2} \quad x_{m+1} x_{m+2} x_{m+3} \quad x_{m+r} x_{m+r+1} x_{m+r+2}$$

$$\frac{1}{p_0-q_0} \quad \frac{1}{p_0-q_1} \quad \frac{1}{p_0-q_r} \qquad \frac{t_{m+1}}{t_m} = \frac{\alpha+m}{\beta+m}$$

$$\frac{1}{p_1-q_0} \quad \frac{1}{p_1-q_1} \quad \frac{1}{p_1-q_r} \qquad \frac{k+i+j}{h+i+j} \quad \frac{\frac{k}{c}+\frac{i}{c}+\frac{j}{c}}{\frac{h}{c}+\frac{i}{c}+\frac{j}{c}}$$

$$t_{m+i+j} = \frac{1}{p_i-q_j} = \frac{1}{p_j-q_i}$$

$$(p_i-q_j)\,t_{m+i+j} = 1 \qquad i = 0, 1, \dots, r \quad j = 0, 1, \ i$$

$$(p_{i+1}-q_j)\,t_{m+i+j+1} = 1 \qquad \frac{\alpha+m+i+j}{\gamma+m+i+j} \cdot \frac{p_{i+1}-q_j}{p_i-q_j} = 1$$

$$p_i = c+i \quad q_j = d-j$$

p_0 $t_m p_0$ $-t_m q_0$ $=1$

~~$t_{m+1} p_0$ $-t_{m+1} q_1$ $=1$~~

$t_{m+1} p_1$ $-t_{m+1}$ $q_j := -q_j$

$t := 1/t$

$t_m p_0$ $-t_m q_0$ $p_i + q_j = t_{i+j}$

$i = 0, \ldots, r$ $r+1$ 3

$j = 0, 1, \ldots, i$ $\ldots 2r+1$

$t_{m+1} p_1$ $-t_{m+1} q_0$

$t_{m+2} p_1$ $-t_{m+2} q_1$

$p_0\ q_0$

$p_1\ q_0$

$p_1\ q_1$

$p_0\ q_0$ $2r+1$

$p_i = t_i$ $p_0 = 0$

$q_j = t_j$

t_{m+2} $p_0 + q_j = t_j$

t_{m+2}

$\frac{1}{0!}$ $\frac{1}{1!}$ $\frac{1}{2!}$ 1 1 $\frac{1}{2}1$

$r+1$

$p_0\ q_r$

$p_1\ q_0$ r

$p_1\ q_0$

$\frac{1}{1!}$ $\frac{1}{2!}$ $\frac{1}{3!}$ $\frac{1}{1!}$ $\frac{1}{2!}$ $\frac{1}{3}$

$\frac{1}{2!}$ $\frac{1}{3!}$ $\frac{1}{4!}$ $\frac{1}{2!}$ $\frac{1}{3!}$ $3\frac{1}{4}$

$p_1 + q_0$

$r+1$ $r+1$ $= q_0 \cdot q_1$

$\frac{1}{1!}$ $\frac{1}{2}$

$t_{i+r} - t_j + p_0 + t_j - p_0 =$

t_{i+j}

$\frac{1}{2!} \cdot \frac{2}{3}$

$2r$

$p_i + q_r = t_{i+r}$

0 $r-1$ r

1 1

1 1 1 1

1 1

1 1

1 1

1 1

$p_i + t_0 = t_{i+j}$

$p_i = t_{i+j} - t_j$

$p_i = t_{i+r} - t_r$?

$q_j = t_j - p_0$ $p_i + q_r = p_i + t_j - p_0 = t_{i+r}$ $p_i = t_{i+r} - t_j + p_0$

$$\left\| \frac{1}{p_i + q_i} \right\| = \prod_{i>k} (p_i - p_k)(q_i - q_k)$$

$$\frac{\prod_{k=0}^{r} \prod_{i=k+1}^{r} (p_i - p_k)(q_i - q_k)}{\prod_{k=0}^{r} \prod_{i=0}^{r} (p_i + p_k)}$$

$$p_i = \frac{1}{t_{i+j}} - \frac{1}{t_j} \qquad q_i = \frac{1}{t_j}$$

$$= t_j - t_{i+j}$$