IKKI O'ZGARUVCHILI GIPERGIOMETRIK FUNKSIYANING UMUMIY YECHIMLARI

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Annotatsiya. Ushbu maqolada ikki o'zgaruvchili Gipergiometrik funksiyaning umumiy yechimlari va xossalari kiritilgan. Xususan Gipergiometrik funksiyaning umumiy yechimlari topilgan va sodda ko'rinishga keltirilgan. Ularning umumiy formulasi topilgan. Bu esa ayrim masalalarni yechishda bir muncha oson bo'ladi. Ushbu yechimda asosan murakkab funksiyanining birinchi, ikkinchi va uchinchi tartibli hosilalari orqali yechim topilgan. Murakkab funksiyaning barcha hosilalari to'liq ko'rsatilishiga sabab esa sigma funksiya ikki o'zgaruvchili funksiya bo'lganidadir. Chunki ularni x va y hosilalarida turli ko'rinishda bo'lishidir. Uning ko'rinishini quyidagi yechimlarda ko'rish mumkin.ularning barcha murakkab yechimlari keltirilgan

Kalitso'zlar. Hosila, murakkab funksiya hosilasi, chiziqli akslantirish, differensiallash.

Bizga ixtiyoriy

$$L(u) = y^m u_{xxx} - u_{yyy} = 0$$

funksiya berilgan bo'lsin. Bu yerdagi funksiya o'zgaruvchilarini quyidagicha belgilab soddaroq ko'rinishga keltirib olamiz. Ya'ni

$$u = P\omega(\sigma) \qquad P = x^{-3}, \qquad \sigma = \left(-\frac{3}{x(m+3)}y^{\frac{m+3}{3}}\right)^3$$

$$\frac{m}{m+3} = \beta,\ m = \beta(m+3),\ m(1-\beta) = 3\beta,\ m = \frac{3\beta}{1-\beta}$$ bo'ladi.

Funksiya o'zgaruvchilarini hosilalarini quyidagicha olinadi.

$$u_x = P_x\omega + P\omega_\sigma\sigma_x$$

$$u_y = P_y\omega + P\omega_\sigma\sigma_y$$

Bu yerda sigma funksiya x va y ga bog'liq bo'lganligi uchun murakkab funksiya deyiladi va uning hosilasi murakkab funksiya hosilasiga nisbatan olinadi. O'zgaruvchilarning hosilalari to'liq olinib (1) tenglamaga qo'yiladi. Shunda uning umumiy ko'rinishi kelib chiqadi.

$$u_{xx} = P_{xx}\omega + P_x\omega_\sigma\sigma_x + P_x\omega_\sigma\sigma_x + P\omega_{\sigma\sigma}\sigma_x^2 + P\omega_\sigma\sigma_{xx}$$

$$u_{yy} = P_{yy}\omega + P_y\omega_\sigma\sigma_y + P_y\omega_\sigma\sigma_y + P\omega_{\sigma\sigma}\sigma_y^2 + P\omega_\sigma\sigma_{yy}$$

$$u_{xx} = P_{xx}\omega + 2P_x\omega_\sigma\sigma_x + P\omega_{\sigma\sigma}\sigma^2{}_x + P\omega_\sigma\sigma_{xx}$$

$$u_{yy} = P_{yy}\omega + 2P_y\omega_\sigma\sigma_y + P\omega_{\sigma\sigma}\sigma^2{}_y + P\omega_\sigma\sigma_{yy}$$

$$u_{xxx} = P_{xxx}\omega + P_{xx}\omega_\sigma\sigma_x + 2P_{xx}\omega_\sigma\sigma_x + 2P_x(\omega_{\sigma\sigma}\sigma_x^2 + \omega_\sigma\sigma_{xx}) + P_x\omega_{\sigma\sigma}\sigma_x^2 +$$
$$+P\left(\omega_{\sigma\sigma\sigma}\sigma_x^3 + 2\omega_{\sigma\sigma}\sigma_{xx}\sigma_x\right) + P_x\omega_\sigma\sigma_{xx} + P\left(\omega_{\sigma\sigma\sigma}\sigma_x\sigma_{xx} + \omega_\sigma\sigma_{xxx}\right)$$

$$u_{yyy} = P_{yyy}\omega + P_{yy}\omega_\sigma\sigma_y + 2P_{yy}\omega_\sigma\sigma_y + 2P_y(\omega_{\sigma\sigma}\sigma_y^2 + \omega_\sigma\sigma_{yy}) + P_y\omega_{\sigma\sigma}\sigma_y^2 +$$
$$+P\left(\omega_{\sigma\sigma\sigma}\sigma_y^3 + 2\omega_{\sigma\sigma}\sigma_{yy}\sigma_y\right) + P_y\omega_\sigma\sigma_{yy} + P\left(\omega_{\sigma\sigma\sigma}\sigma_y\sigma_{yy} + \omega_\sigma\sigma_{yyy}\right)$$

$$u_{xxx} = P_{xxx}\omega + 3P_{xx}\omega_\sigma\sigma_x + 3P_x\omega_{\sigma\sigma}\sigma^2{}_x + 3P_x\omega_\sigma\sigma_{xx} + P\omega_{\sigma\sigma\sigma}\sigma^3{}_x + 3P\omega_{\sigma\sigma}\sigma_x\sigma_{xx} +$$
$$+P\omega_\sigma\sigma_{xxx}$$

$$u_{yyy} = P_{yyy}\omega + 3P_{yy}\omega_\sigma\sigma_y + 3P_y\omega_{\sigma\sigma}\sigma^2{}_y + 3P_y\omega_\sigma\sigma_{yy} + P\omega_{\sigma\sigma\sigma}\sigma^3{}_y + 3P\omega_{\sigma\sigma}\sigma_y\sigma_{yy} +$$
$$+P\omega_\sigma\sigma_{yyy}$$

$$y^m u_{xxx} = y^m P_{xxx}\omega + 3y^m P_{xx}\omega_\sigma\sigma_x + 3y^m P_x\omega_{\sigma\sigma}\sigma^2{}_x + 3y^m P_x\omega_\sigma\sigma_{xx} + y^m P\omega_{\sigma\sigma\sigma}\sigma^3{}_x +$$
$$+3y^m P\omega_{\sigma\sigma}\sigma_x\sigma_{xx} + y^m P\omega_\sigma\sigma_{xxx}$$

$$-u_{yyy} = -P_{yyy}\omega - 3P_{yy}\omega_\sigma\sigma_y - 3P_y\omega_{\sigma\sigma}\sigma^2{}_y - 3P_y\omega_\sigma\sigma_{yy} - P\omega_{\sigma\sigma\sigma}\sigma^3{}_y - 3P\omega_{\sigma\sigma}\sigma_y\sigma_{yy} -$$
$$-P\omega_\sigma\sigma_{yyy}$$
$$y^m P_{xxx}\omega + 3y^m P_{xx}\omega_\sigma\sigma_x + 3y^m P_x\omega_{\sigma\sigma}\sigma^2{}_x + 3y^m P_x\omega_\sigma\sigma_{xx} + y^m P\omega_{\sigma\sigma\sigma}\sigma^3{}_x +$$
$$+3y^m P\omega_{\sigma\sigma}\sigma_x\sigma_{xx} + y^m P\omega_\sigma\sigma_{xxx} = 0$$

$$-P_{yyy}\omega - 3P_{yy}\omega_\sigma\sigma_y - 3P_y\omega_{\sigma\sigma}\sigma^2{}_y - 3P_y\omega_\sigma\sigma_{yy} - P\omega_{\sigma\sigma\sigma}\sigma^3{}_y - 3P\omega_{\sigma\sigma}\sigma_y\sigma_{yy} -$$
$$-P\omega_\sigma\sigma_{yyy} = 0$$
$$u_{xxx} + u_{yyy} = 0$$
$$y^m P\omega_{\sigma\sigma\sigma}\sigma^3{}_x - P\omega_{\sigma\sigma\sigma}\sigma^3{}_y + 3y^m P_x\omega_{\sigma\sigma}\sigma^2{}_x - 3P_y\omega_{\sigma\sigma}\sigma^2{}_y + 3y^m P\omega_{\sigma\sigma}\sigma_x\sigma_{xx} -$$
$$-3P\omega_{\sigma\sigma}\sigma_y\sigma_{yy} + 3y^m P_{xx}\omega_\sigma\sigma_x - 3P_{yy}\omega_\sigma\sigma_y + 3y^m P_x\omega_\sigma\sigma_{xx} - 3P_y\omega_\sigma\sigma_{yy} +$$
$$+y^m P\omega_\sigma\sigma_{xxx} - P\omega_\sigma\sigma_{yyy} + y^m P_{xxx}\omega - P_{yyy}\omega$$

$$P\left[y^m\sigma_x^3 - \sigma_x^3\right]\omega_{\sigma\sigma\sigma} + 3\left[y^m P_x\sigma_x^3 - P_y\sigma_y^2 + y^m P\sigma_x\sigma_{xx} - P\sigma_y\sigma_{yy}\right]\omega_{\sigma\sigma} +$$
$$+\left[3\left(y^m P_{xx}\sigma_x - P_{yy}\sigma_y\right) + 3\left(y^m P_x\sigma_{xx} - P_y\sigma_{yy}\right) + P\left(y^m\sigma_{xxx} - \sigma_{yyy}\right)\right]\omega_\sigma +$$
$$+\left(y^m P_{xxx} - P_{yyy}\right)\omega = 0$$

Hosil bo’lgan tenglamani soddaroq qilib yozish maqsadida sigma funksiyaga bog’lab, uni quyidagicha yozib olamiz.

$$A\omega_{\sigma\sigma\sigma} + B\omega_{\sigma\sigma} + C\omega_\sigma + D\omega = 0 \qquad \textbf{(2)}$$

Shundan so’ng esa A,B,C,D larni umumiy yechimini topishimiz mumkin. Ya’ni quyidagi ko’rinishda

$$A = P\left[y^m\sigma_x^3 - \sigma_x^3\right]$$
$$B = 3\left[y^m P_x\sigma_x^3 - P_y\sigma_y^2 + y^m P\sigma_x\sigma_{xx} - P\sigma_y\sigma_{yy}\right]$$
$$C = \left[3\left(y^m P_{xx}\sigma_x - P_{yy}\sigma_y\right) + 3\left(y^m P_x\sigma_{xx} - P_y\sigma_{yy}\right) + P\left(y^m\sigma_{xxx} - \sigma_{yyy}\right)\right]$$
$$D = y^m P_{xxx} - P_{yyy}$$

$$P = x^{-3},\quad P' = \left(x^{-3}\right)',\quad P_x = -3x^{-3-1},\quad P_x = -3x^{-4},\quad P_x = -3Px^{-1};$$

$$P_x = -3x^{-4},\quad P_x' = \left(-3x^{-4}\right)',\quad P_{xx} = -3(-4)x^{-4-1},\quad P_{xx} = 12x^{-5},\quad P_{xx} = 12Px^{-2};$$

$$P_{xx} = 12x^{-5},\quad P_{xx}' = \left(12x^{-5}\right)',\quad P_{xxx}12(-5)x^{-5-1},\quad P_{xxx} = -60x^{-6},\quad P_{xxx} = -60Px^{-3};$$

$$P_y = 0;$$

$$\sigma = \left(-\frac{3}{x(m+3)}y^{\frac{m+3}{3}}\right)^3 = -\frac{3^3}{\left(x(m+3)\right)^3}y^{\frac{m+3}{3}3} = -\frac{27}{x^3(m+3)^3}y^{m+3} = -\frac{\frac{27}{(m+3)^3}y^{m+3}}{x^3}$$

$$\sigma = -\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}$$

$$\sigma' = \left(-\frac{\frac{27}{(m+3)^3}y^{m+3}}{x^3}\right)' = -\left(\frac{\left(\frac{3^3}{(m+3)^3}y^{m+3}\right)'x^3 - \left(\frac{3^3}{(m+3)^3}y^{m+3}\right)\left(x^3\right)'}{\left(x^3\right)^2}\right) =$$

$$= -\frac{-3\frac{3^3}{(m+3)^3}y^{m+3}x^2}{x^6},\quad \sigma_x = \frac{\frac{3^4}{(m+3)^3}y^{m+3}}{x^4}$$

$$\sigma_x' = \left(\frac{\frac{3^4}{(m+3)^3}y^{m+3}}{x^4}\right)' = \left(\frac{\left(\frac{3^4}{(m+3)^3}y^{m+3}\right)'x^4 - \left(\frac{3^4}{(m+3)^3}y^{m+3}\right)\left(x^4\right)'}{\left(x^4\right)^2}\right) =$$

$$= \frac{-4\frac{3^4}{(m+3)^3}y^{m+3}x^3}{x^8},\quad \sigma_{xx} = -\frac{4\frac{3^4}{(m+3)^3}y^{m+3}}{x^5}$$

$$\sigma_{xx}'=\left(-\frac{4\frac{3^4}{(m+3)^3}y^{m+3}}{x^5}\right)'=-\left(\frac{\left(4\frac{3^4}{(m+3)^3}y^{m+3}\right)'x^5-\left(4\frac{3^4}{(m+3)^3}y^{m+3}\right)(x^5)'}{(x^5)^2}\right)=$$

$$=-\frac{-4\cdot5\frac{3^4}{(m+3)^3}y^{m+3}x^4}{x^{10}},\quad \sigma_{xxx}=\frac{20\frac{3^4}{(m+3)^3}y^{m+3}}{x^6}$$

$$\sigma'=\left(-\frac{\frac{27}{(m+3)^3}y^{m+3}}{x^3}\right)'=-\left(\frac{\left(\frac{3^3}{(m+3)^3}y^{m+3}\right)'x^3-\left(\frac{3^3}{(m+3)^3}y^{m+3}\right)(x^3)'}{(x^3)^2}\right)=$$

$$=-\frac{\left(\frac{3^3}{(m+3)^3}y^{m+3}\right)'x^3}{x^6}=-\frac{\left(\frac{3^3(y^{m+3})'(m+3)^3-3^3y^{m+3}\left((m+3)^3\right)'}{\left((m+3)^3\right)^2}\right)}{x^3}=$$

$$=-\frac{\frac{3^3(m+3)(y^{m+3-1})(m+3)^3}{(m+3)^6}}{x^3}=-\frac{\frac{3^3y^{m+2}(m+3)^4}{(m+3)^6}}{x^3},\quad \sigma_y=-\frac{\frac{3^3}{(m+3)^2}y^{m+2}}{x^3}$$

$$\sigma_y'=\left(-\frac{\frac{3^3}{(m+3)^2}y^{m+2}}{x^3}\right)'=-\left(\frac{\left(\frac{3^3}{(m+3)^3}y^{m+2}\right)'x^3-\left(\frac{3^3}{(m+3)^3}y^{m+2}\right)(x^3)'}{(x^3)^2}\right)=$$

$$=-\frac{\left(\frac{3^3}{(m+3)^2}y^{m+2}\right)'x^3}{x^6}=-\frac{\left(\frac{3^3(y^{m+2})'(m+3)^2-3^3y^{m+2}\left((m+3)^2\right)'}{\left((m+3)^2\right)^2}\right)}{x^3}=$$

$$=-\frac{\frac{3^3(m+2)(y^{m+2-1})(m+3)^2}{(m+3)^4}}{x^3}=-\frac{\frac{3^3y^{m+1}(m+2)}{(m+3)^2}}{x^3},\quad \sigma_{yy}=-\frac{\frac{3^3(m+2)}{(m+3)^2}y^{m+1}}{x^3}$$

$$\sigma_{yy}'=\left(-\frac{\frac{3^3(m+2)}{(m+3)^2}y^{m+1}}{x^3}\right)'=-\left(\frac{\left(\frac{3^3(m+2)}{(m+3)^3}y^{m+1}\right)'x^3-\left(\frac{3^3(m+2)}{(m+3)^3}y^{m+1}\right)(x^3)'}{(x^3)^2}\right)=$$

$$=-\frac{\left(\frac{3^3(m+2)}{(m+3)^2}y^{m+1}\right)'x^3}{x^6}=-\frac{\left(\frac{3^3\left((m+2)y^{m+1}\right)'(m+3)^2-\left(3^3(m+2)y^{m+1}\right)\left((m+3)^2\right)'}{\left((m+3)^2\right)^2}\right)}{x^3}=$$

$$=-\frac{\frac{3^3(m+1)(m+2)\left(y^{m+1-1}\right)(m+3)^2}{(m+3)^4}}{x^3}=-\frac{\frac{3^3y^m(m+1)(m+2)}{(m+3)^2}}{x^3},\quad \sigma_{yyy}=-\frac{\frac{3^3(m+1)(m+2)}{(m+3)^2}y^m}{x^3}$$

$$A=P\left[y^m\sigma_x^3-\sigma_x^3\right]=P\left[y^m\left[\frac{\frac{3^4}{(m+3)^3}y^{m+3}}{x^4}\right]^3+\left[\frac{\frac{3^3}{(m+3)^2}y^{m+2}}{x^3}\right]^3\right]$$ shu

ekanligidan, uning to'la ko'rinishini keltirib chiqaramiz.

$$A=P\left[y^m\frac{\frac{3^{12}}{(m+3)^9}y^{3m+9}}{x^{12}}+\frac{\frac{3^9}{(m+3)^6}y^{3m+6}}{x^9}\right]$$

$$A=P\frac{3^3}{x^3}\left[y^m\frac{\frac{3^9}{(m+3)^9}y^{3m+9}}{x^9}+\frac{\frac{3^6}{(m+3)^6}y^{3m+6}}{x^6}\right]$$

$$A=Py^m\frac{3^3}{x^3}\left[\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}\frac{\frac{3^6}{(m+3)^6}y^{2m+6}}{x^6}+\frac{\frac{3^6}{(m+3)^6}y^{2m+6}}{x^6}\right]$$

$$A = Py^m \frac{3^3}{x^3}\left[\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}+1\right]\cdot\frac{\frac{3^6}{(m+3)^6}y^{2m+6}}{x^6};$$

$$A = Py^m \frac{3^3}{x^3}\left[\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}+1\right]\cdot\left[\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}\right]^2; \qquad \sigma = -\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3};$$

$$A = \frac{3^3 Py^m}{x^3}\sigma^2(1-\sigma).$$

Demak, A ning ko'rinishi quyidagicha kelib chiqdi. Shunda so'ng esa, A ni keltirib chiqarganimizdek B ni ham umumiy ko'rinishini keltirib chiqadi.

$$B = 3\left[y^m P_x\sigma_x^3 - P_y\sigma_y^2 + y^m P\sigma_x\sigma_{xx} - P\sigma_y\sigma_{yy}\right],$$

$$B = 3y^m P_x\sigma_x^2 + 3P\left(y^m\sigma_x\sigma_{xx} - \sigma_y\sigma_{yy}\right),\ P_y = 0.$$

$$B = \frac{-3^2 Py^m}{x}\left(\frac{\frac{3^4}{(m+3)^3}y^{m+3}}{x^4}\right)^2 +$$

$$+3P\left(\left(y^m\frac{\frac{3^4}{(m+3)^3}y^{m+3}}{x^4}\right)\cdot\left(-\frac{4\frac{3^4}{(m+3)^3}y^{m+3}}{x^5}\right)-\left(-\frac{\frac{3^3}{(m+3)^2}y^{m+2}}{x^3}\right)\cdot\left(-\frac{\frac{3^3(m+2)}{(m+3)^2}y^{m+1}}{x^3}\right)\right)$$

$$B = -\frac{3^2 y^m P}{x}\left(\frac{\frac{3^8}{(m+3)^6}y^{2m+6}}{x^8}\right)+3P\left(-y^m\frac{\frac{3^8}{(m+3)^6}y^{2m+6}}{x^9}-\frac{\frac{3^6(m+2)}{(m+3)^4}y^{2m+3}}{x^6}\right)=$$

$$= -3^2 Py^m\frac{\frac{3^8}{(m+3)^6}y^{2m+6}}{x^9} - 3Py^m\frac{4\frac{3^8}{(m+3)^6}y^{2m+6}}{x^9} - 3P\frac{\frac{3^6(m+2)}{(m+3)^4}y^{2m+3}}{x^6} =$$

$$=-\frac{3^3Py^m}{x^3}\left(3\frac{\frac{3^6}{(m+3)^6}y^{2m+6}}{x^6}+\frac{4\frac{3^6}{(m+3)^6}y^{2m+6}}{x^6}+\frac{\frac{3\cdot 3^3(m+2)}{(m+3)^4}y^{m+3}}{x^3}\right)=$$

$$=-\frac{3^3Py^m}{x^3}\left((3+4)\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}+\frac{3(m+2)}{(m+3)}\right)\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}=$$

$$=\frac{3^3Py^m}{x^3}\left(\frac{3(m+2)}{(m+3)}-(3+4)\sigma\right)\sigma.\ \sigma=-\frac{\frac{3^3}{(m+3)^3}y^{m+3}}{x^3}$$

$$B=\frac{3^3Py^m}{x^3}\left(\frac{3(m+2)}{(m+3)}-(3+4)\sigma\right)\sigma. \qquad m=\frac{3\beta}{1-\beta};$$

$$3\frac{(m+2)}{(m+3)}=3\frac{\frac{3\beta}{1-\beta}+2}{\frac{3\beta}{1-\beta}+3}=3\frac{\frac{3\beta+2(1-\beta)}{(1-\beta)}}{\frac{3\beta+3(1-\beta)}{(1-\beta)}}=3\frac{\frac{3\beta+2-2\beta}{(1-\beta)}}{\frac{3\beta+3-3\beta}{(1-\beta)}}=$$

$$=3\frac{\frac{\beta+2}{(1-\beta)}}{\frac{3}{(1-\beta)}}=3\frac{\beta+2}{3}=\beta+2$$

$$B=\frac{3^3Py^m}{x^3}\left((\beta+2)-(3+4)\sigma\right)\sigma$$

$$B=\frac{3^3Py^m}{x^3}\left(\frac{2+\beta}{3}+\frac{1+2\beta}{3}+1-\left(3+1+\frac{4}{3}+\frac{5}{3}\right)\sigma\right)\sigma.$$

Demak B ning ham umumiy yechimi kelib chiqdi. C va D larni ham shu ko'rinishda topilganida quyidagicha bo'ladi.

$$C=\frac{3^3 y^m P}{x^3}\left(\frac{2\beta+1}{3}\cdot\frac{2+\beta}{3}-\left[1+1+\frac{4}{3}+\frac{5}{3}+1\cdot\frac{4}{3}+1\cdot\frac{5}{3}+\frac{4}{3}\cdot\frac{5}{3}\right]\sigma\right).$$

$$D=-\frac{3^3 y^m P}{x^3}\cdot 1\cdot\frac{4}{3}\cdot\frac{5}{3}$$

Bu hosil bo'lgan koeyfitsentlarni (2) tenglamaga qoyamiz.

$$A\omega_{\sigma\sigma\sigma}+B\omega_{\sigma\sigma}+C\omega_{\sigma}+D\omega=\frac{3^3 P y^m}{x^3}\sigma^2(1-\sigma)+$$

$$+\frac{3^3 P y^m}{x^3}\left(\frac{2+\beta}{3}+\frac{1+2\beta}{3}+1-\left(3+1+\frac{4}{3}+\frac{5}{3}\right)\sigma\right)\sigma+$$

$$+\frac{3^3 y^m P}{x^3}\left(\frac{2\beta+1}{3}\cdot\frac{2+\beta}{3}-\left[1+1+\frac{4}{3}+\frac{5}{3}+1\cdot\frac{4}{3}+1\cdot\frac{5}{3}+\frac{4}{3}\cdot\frac{5}{3}\right]\sigma\right)-\frac{3^3 y^m P}{x^3}\cdot 1\cdot\frac{4}{3}\cdot\frac{5}{3}=$$

$$\frac{3^3 P y^m}{x^3}\left\{\sigma^2(1-\sigma)+\left(\frac{2+\beta}{3}+\frac{1+2\beta}{3}+1-\left(3+1+\frac{4}{3}+\frac{5}{3}\right)\sigma\right)\sigma+\right.$$

$$\left.+\left(\frac{2\beta+1}{3}\cdot\frac{2+\beta}{3}-\left[1+1+\frac{4}{3}+\frac{5}{3}+1\cdot\frac{4}{3}+1\cdot\frac{5}{3}+\frac{4}{3}\cdot\frac{5}{3}\right]\sigma\right)-1\cdot\frac{4}{3}\cdot\frac{5}{3}\right\}.$$

Tenglamaning sodda yechimi hosil bo'ldi. Demak, biz izlayotgan yechimga erisha oldik.