Appendix: mathematical calculations.

From $z = 1 - x - y$ it follows:

$$x\frac{\partial f[y;\ z(x,y)]}{\partial x} = x\frac{\partial f}{\partial z}\frac{\partial z}{\partial x} = -x\frac{\partial f}{\partial z} =$$
$$= -2a_{02}xz - 3a_{03}xz^2 - 4a_{04}xz^3 - 5a_{05}xz^4 - a_{11}xy - 2a_{12}xyz - 3a_{13}xyz^2 - 4a_{14}xyz^3 - a_{21}xy^2$$
$$- 2a_{22}xy^2z - 3a_{23}xy^2z^2 - a_{31}xy^3 - 2a_{32}xy^3z - a_{41}xy^4$$

$$y\frac{\partial \varphi[z(x,y);x]}{\partial x} = y\frac{\partial \varphi}{\partial x} + y\frac{\partial \varphi}{\partial z}\frac{\partial z}{\partial x} = y\frac{\partial \varphi}{\partial x} - y\frac{\partial \varphi}{\partial z} =$$
$$= 2b_{02}xy + 3b_{03}x^2y + 4b_{04}x^3y + 5b_{05}x^4y + b_{11}yz + 2b_{12}xyz + 3b_{13}x^2yz + 4b_{14}x^3yz + b_{21}yz^2$$
$$+ 2b_{22}xyz^2 + 3b_{23}x^2yz^2 + b_{31}yz^3 + 2b_{32}xyz^3 + b_{41}yz^4 - b_{11}xy - b_{12}x^2y - b_{13}x^3y - b_{14}x^4y$$
$$- 2b_{20}yz - 2b_{21}xyz - 2b_{22}x^2yz - 2b_{23}x^3yz - 3b_{30}yz^2 - 3b_{31}xyz^2 - 3b_{32}x^2yz^2 - 4b_{40}yz^3$$
$$- 4b_{41}xyz^3 - 5b_{50}yz^4$$

$$z\frac{\partial \xi(x;y)}{\partial x} =$$
$$= c_{11}yz + c_{12}y^2z + c_{13}y^3z + c_{14}y^4z + 2c_{20}xz + 2c_{21}xyz + 2c_{22}xy^2z + 2c_{23}xy^3z + 3c_{30}x^2z$$
$$+ 3c_{31}x^2yz + 3c_{32}x^2y^2z + 4c_{40}x^3z + 4c_{41}x^3yz + 5c_{50}x^4z$$

We replace z with $(1 - x - y)$, dissolve the brackets and combine the similar terms:

$$x\frac{\partial f}{\partial x} =$$
$$= -2a_{02}x(1 - x - y) - 3a_{03}x(1 - 2y + y^2 - 2x + 2xy + x^2)$$
$$- 4a_{04}x(1 - 3y + 3y^2 - y^3 - 3x + 6xy - 3xy^2 + 3x^2 - 3x^2y - x^3)$$
$$- 5a_{05}x(1 - 4y + 6y^2 - 4y^3 + y^4 - 4x + 12xy - 12xy^2 + 4xy^3 + 6x^2 - 12x^2y + 6x^2y^2 - 4x^3$$
$$+ 4x^3y + x^4) - a_{11}xy - 2a_{12}xy(1 - x - y) - 3a_{13}xy(1 - 2y + y^2 - 2x + 2xy + x^2)$$
$$- 4a_{14}xy(1 - 3y + 3y^2 - y^3 - 3x + 6xy - 3xy^2 + 3x^2 - 3x^2y - x^3) - a_{21}xy^2 - 2a_{22}xy^2(1 - x - y)$$
$$- 3a_{23}xy^2(1 - 2y + y^2 - 2x + 2xy + x^2) - a_{31}xy^3 - 2a_{32}xy^3(1 - x - y) - a_{41}xy^4 =$$

$$= -2a_{02}x + 2a_{02}x^2 + 2a_{02}xy - 3a_{03}x + 6a_{03}xy - 3a_{03}xy^2 + 6a_{03}x^2 - 6a_{03}x^2y - 3a_{03}x^3 - 4a_{04}x$$
$$+ 12a_{04}xy - 12a_{04}xy^2 + 4a_{04}xy^3 + 12a_{04}x^2 - 24a_{04}x^2y + 12a_{04}x^2y^2 - 12a_{04}x^3 + 12a_{04}x^3y$$
$$+ 4a_{04}x^4 - 5a_{05}x + 20a_{05}xy - 30a_{05}xy^2 + 20a_{05}xy^3 - 5a_{05}xy^4 + 20a_{05}x^2 - 60a_{05}x^2y$$
$$+ 60a_{05}x^2y^2 - 20a_{05}x^2y^3 - 30a_{05}x^3 + 60\ a_{05}x^3y - 30a_{05}x^3y^2 + 20a_{05}x^4 - \mathbf{20a_{05}x^4y} - 5a_{05}x^5$$
$$- a_{11}xy - 2a_{12}xy + 2a_{12}x^2y + 2a_{12}xy^2 - 3a_{13}xy + 6a_{13}xy^2 - 3a_{13}xy^3 + 6a_{13}x^2y - 6a_{13}x^2y^2$$
$$- 3a_{13}x^3y - 4a_{14}xy + 12a_{14}xy^2 - 12a_{14}xy^3 + 4a_{14}xy^4 + 12a_{14}x^2y - 24a_{14}x^2y^2 + 12a_{14}x^2y^3$$
$$- 12a_{14}x^3y + 12a_{14}x^3y^2 + \mathbf{4a_{14}x^4y} - a_{21}xy^2 - 2a_{22}xy^2 + 2a_{22}x^2y^2 + 2a_{22}xy^3 - 3a_{23}xy^2$$
$$+ 6a_{23}xy^3 - 3a_{23}xy^4 + 6a_{23}x^2y^2 - 6a_{23}x^2y^3 - 3a_{23}x^3y^2 - a_{31}xy^3 - 2a_{32}xy^3 + 2a_{32}x^2y^3$$
$$+ 2a_{32}xy^4 - a_{41}xy^4 =$$

$$= x(-2a_{02} - 3a_{03} - 4a_{04} - 5a_{05}) + xy(2a_{02} + 6a_{03} + 12a_{04} + 20a_{05} - a_{11} - 2a_{12} - 3a_{13} - 4a_{14})$$
$$+ xy^2(-3a_{03} - 12a_{04} - 30a_{05} + 2a_{12} + 6a_{13} + 12a_{14} - a_{21} - 2a_{22} - 3a_{23})$$
$$+ xy^3(4a_{04} + 20a_{05} - 3a_{13} - 12a_{14} + 2a_{22} + 6a_{23} - a_{31} - 2a_{32})$$
$$+ xy^4(-5a_{05} + 4a_{14} - 3a_{23} + 2a_{32} - a_{41}) + x^2(2a_{02} + 6a_{03} + 12a_{04} + 20a_{05})$$
$$+ x^2y(-6a_{03} - 24a_{04} - 60a_{05} + 2a_{12} + 6a_{13} + 12a_{14})$$
$$+ x^2y^2(12a_{04} + 60a_{05} - 6a_{13} - 24a_{14} + 2a_{22} + 6a_{23}) + x^2y^3(-20a_{05} + 12a_{14} - 6a_{23} + 2a_{32})$$
$$+ x^3(-3a_{03} - 12a_{04} - 30a_{05}) + x^3y(12a_{04} + 60a_{05} - 3a_{13} - 12a_{14})$$
$$+ x^3y^2(-30a_{05} + 12a_{14} - 3a_{23}) + x^4(4a_{04} + 20a_{05}) + x^4y(-20a_{05} + 4a_{14}) + x^5(-5a_{05})$$

$$y\frac{\partial\varphi}{\partial x} =$$
$$= 2b_{02}xy + 3b_{03}x^2y + 4b_{04}x^3y + 5b_{05}x^4y + b_{11}y(1-x-y) + 2b_{12}xy(1-x-y)$$
$$+ 3b_{13}x^2y(1-x-y) + 4b_{14}x^3y(1-x-y) + b_{21}y(1-2y+y^2-2x+2xy+x^2)$$
$$+ 2b_{22}xy(1-2y+y^2-2x+2xy+x^2) + 3b_{23}x^2y(1-2y+y^2-2x+2xy+x^2)$$
$$+ b_{31}y(1-3y+3y^2-y^3-3x+6xy-3xy^2+3x^2-3x^2y-x^3)$$
$$+ 2b_{32}xy(1-3y+3y^2-y^3-3x+6xy-3xy^2+3x^2-3x^2y-x^3)$$
$$+ b_{41}y(1-4y+6y^2-4y^3+y^4-4x+12xy-12xy^2+4xy^3+6x^2-12x^2y+6x^2y^2-4x^3$$
$$+ 4x^3y+x^4) - b_{11}xy - b_{12}x^2y - b_{13}x^3y - b_{14}x^4y - 2b_{20}y(1-x-y) - 2b_{21}xy(1-x-y)$$
$$- 2b_{22}x^2y(1-x-y) - 2b_{23}x^3y(1-x-y) - 3b_{30}y(1-2y+y^2-2x+2xy+x^2)$$
$$- 3b_{31}xy(1-2y+y^2-2x+2xy+x^2) - 3b_{32}x^2y(1-2y+y^2-2x+2xy+x^2)$$
$$- 4b_{40}y(1-3y+3y^2-y^3-3x+6xy-3xy^2+3x^2-3x^2y-x^3)$$
$$- 4b_{41}xy(1-3y+3y^2-y^3-3x+6xy-3xy^2+3x^2-3x^2y-x^3)$$
$$- 5b_{50}y(1-4y+6y^2-4y^3+y^4-4x+12xy-12xy^2+4xy^3+6x^2-12x^2y+6x^2y^2-4x^3$$
$$+ 4x^3y+x^4) =$$

$$= 2b_{02}xy + 3b_{03}x^2y + 4b_{04}x^3y + 5b_{05}x^4y + b_{11}y - b_{11}xy - b_{11}y^2 + 2b_{12}xy - 2b_{12}x^2y - 2b_{12}xy^2$$
$$+ 3b_{13}x^2y - 3b_{13}x^3y - 3b_{13}x^2y^2 + 4b_{14}x^3y - 4b_{14}x^4y - 4b_{14}x^3y^2 + b_{21}y - 2b_{21}y^2 + b_{21}y^3$$
$$- 2b_{21}xy + 2b_{21}xy^2 + b_{21}x^2y + 2b_{22}xy - 4b_{22}xy^2 + 2b_{22}xy^3 - 4b_{22}x^2y + 4b_{22}x^2y^2 + 2b_{22}x^3y$$
$$+ 3b_{23}x^2y - 6b_{23}x^2y^2 + 3b_{23}x^2y^3 - 6b_{23}x^3y + 6b_{23}x^3y^2 + 3b_{23}x^4y + b_{31}y - 3b_{31}y^2 + 3b_{31}y^3$$
$$- b_{31}y^4 - 3b_{31}xy + 6b_{31}xy^2 - 3b_{31}xy^3 + 3b_{31}x^2y - 3b_{31}x^2y^2 - b_{31}x^3y + 2b_{32}xy - 6b_{32}xy^2$$
$$+ 6b_{32}xy^3 - 2b_{32}xy^4 - 6b_{32}x^2y + 12b_{32}x^2y^2 - 6b_{32}x^2y^3 + 6b_{32}x^3y - 6b_{32}x^3y^2 - 2b_{32}x^4y + b_{41}y$$
$$- 4b_{41}y^2 + 6b_{41}y^3 - 4b_{41}y^4 + b_{41}y^5 - 4b_{41}xy + 12b_{41}xy^2 - 12b_{41}xy^3 + 4b_{41}xy^4 + 6b_{41}x^2y$$
$$- 12b_{41}x^2y^2 + 6b_{41}x^2y^3 - 4b_{41}x^3y + 4b_{41}x^3y^2 + b_{41}x^4y - b_{11}xy - b_{12}x^2y - b_{13}x^3y - b_{14}x^4y$$
$$- 2b_{20}y + 2b_{20}xy + 2b_{20}y^2 - 2b_{21}xy + 2b_{21}x^2y + 2b_{21}xy^2 - 2b_{22}x^2y + 2b_{22}x^3y + 2b_{22}x^2y^2$$
$$- 2b_{23}x^3y + 2b_{23}x^4y + 2b_{23}x^3y^2 - 3b_{30}y + 6b_{30}y^2 - 3b_{30}y^3 + 6b_{30}xy - 6b_{30}xy^2 - 3b_{30}x^2y$$
$$- 3b_{31}xy + 6b_{31}xy^2 - 3b_{31}xy^3 + 6b_{31}x^2y - 6b_{31}x^2y^2 - 3b_{31}x^3y - 3b_{32}x^2y + 6b_{32}x^2y^2 - 3b_{32}x^2y^3$$
$$+ 6b_{32}x^3y - 6b_{32}x^3y^2 - 3b_{32}x^4y - 4b_{40}y + 12b_{40}y^2 - 12b_{40}y^3 + 4b_{40}y^4 + 12b_{40}xy - 24b_{40}xy^2$$
$$+ 12b_{40}xy^3 - 12b_{40}x^2y + 12b_{40}x^2y^2 + 4b_{40}x^3y - 4b_{41}xy + 12b_{41}xy^2 - 12b_{41}xy^3 + 4b_{41}xy^4$$
$$+ 12b_{41}x^2y - 24b_{41}x^2y^2 + 12b_{41}x^2y^3 - 12b_{41}x^3y + 12b_{41}x^3y^2 + 4b_{41}x^4y - 5b_{50}y + 20b_{50}y^2$$
$$- 30b_{50}y^3 + 20b_{50}y^4 - 5b_{50}y^5 + 20b_{50}xy - 60b_{50}xy^2 + 60b_{50}xy^3 - 20b_{50}xy^4 - 30b_{50}x^2y$$
$$+ 60b_{50}x^2y^2 - 30b_{50}x^2y^3 + 20b_{50}x^3y - 20b_{50}x^3y^2 - 5b_{50}x^4y =$$

$$= y(b_{11} + b_{21} + b_{31} + b_{41} - 2b_{20} - 3b_{30} - 4b_{40} - 5b_{50})$$
$$+ y^2(-b_{11} - 2b_{21} - 3b_{31} - 4b_{41} + 2b_{20} + 6b_{30} + 12b_{40} + 20b_{50})$$
$$+ y^3(b_{21} + 3b_{31} + 6b_{41} - 3b_{30} - 12b_{40} - 30b_{50}) + y^4(-3b_{31} - 4b_{41} + 4b_{40} + 20b_{50})$$
$$+ y^5(b_{41} - 5b_{50})$$
$$+ xy(2b_{02} - 2b_{11} + 2b_{12} - 4b_{21} + 2b_{22} - 6b_{31} + 2b_{32} - 8b_{41} + 6b_{30} + 12b_{40} + 20b_{50})$$
$$+ xy^2(-2b_{12} + 4b_{21} - 4b_{22} + 12b_{31} - 6b_{32} + 24b_{41} - 6b_{30} - 24b_{40} - 60b_{50})$$
$$+ xy^3(2b_{22} - 6b_{31} + 6b_{32} - 24b_{41} + 12b_{40} + 60b_{50}) + xy^4(-2b_{32} + 8b_{41} - 20b_{50})$$
$$+ x^2y(3b_{03} - 3b_{12} + 3b_{13} + 3b_{21} - 6b_{22} + 3b_{23} + 9b_{31} - 9b_{32} + 18b_{41} - 3b_{30} - 12b_{40} - 30b_{50})$$
$$+ x^2y^2(-3b_{13} + 6b_{22} - 6b_{23} - 9b_{31} + 18b_{32} - 36b_{41} + 12b_{40} + 60b_{50})$$
$$+ x^2y^3(3b_{23} - 9b_{32} + 18b_{41} - 30b_{50})$$
$$+ x^3y(4b_{04} - 4b_{13} + 4b_{14} + 4b_{22} - 8b_{23} - 4b_{31} + 12b_{32} - 16b_{41} + 4b_{40} + 20b_{50})$$
$$+ x^3y^2(-4b_{14} + 8b_{23} - 12b_{32} + 16b_{41} - 20b_{50}) + x^4y(5b_{05} - 5b_{14} + 5b_{23} - 5b_{32} + 5b_{41} - 5b_{50})$$

$$z\frac{\partial\xi}{\partial x} =$$
$$= c_{11}y(1-x-y) + c_{12}y^2(1-x-y) + c_{13}y^3(1-x-y) + c_{14}y^4(1-x-y) + 2c_{20}x(1-x-y)$$
$$+ 2c_{21}xy(1-x-y) + 2c_{22}xy^2(1-x-y) + 2c_{23}xy^3(1-x-y) + 3c_{30}x^2(1-x-y)$$
$$+ 3c_{31}x^2y(1-x-y) + 3c_{32}x^2y^2(1-x-y) + 4c_{40}x^3(1-x-y) + 4c_{41}x^3y(1-x-y)$$
$$+ 5c_{50}x^4(1-x-y) =$$

$$= c_{11}y - c_{11}xy - c_{11}y^2 + c_{12}y^2 - c_{12}xy^2 - c_{12}y^3 + c_{13}y^3 - c_{13}xy^3 - c_{13}y^4 + c_{14}y^4 - c_{14}xy^4 - c_{14}y^5$$
$$+ 2c_{20}x - 2c_{20}x^2 - 2c_{20}xy + 2c_{21}xy - 2c_{21}x^2y - 2c_{21}xy^2 + 2c_{22}xy^2 - 2c_{22}x^2y^2 - 2c_{22}xy^3$$
$$+ 2c_{23}xy^3 - 2c_{23}x^2y^3 - 2c_{23}xy^4 + 3c_{30}x^2 - 3c_{30}x^3 - 3c_{30}x^2y + 3c_{31}x^2y - 3c_{31}x^3y - 3c_{31}x^2y^2$$
$$+ 3c_{32}x^2y^2 - 3c_{32}x^3y^2 - 3c_{32}x^2y^3 + 4c_{40}x^3 - 4c_{40}x^4 - 4c_{40}x^3y + 4c_{41}x^3y - 4c_{41}x^4y - 4c_{41}x^3y^2$$
$$+ 5c_{50}x^4 - 5c_{50}x^5 - 5c_{50}x^4y =$$

$$= y(c_{11}) + y^2(-c_{11} + c_{12}) + y^3(-c_{12} + c_{13}) + y^4(-c_{13} + c_{14}) + y^5(-c_{14}) + x(2c_{20})$$
$$+ xy(-c_{11} - 2c_{20} + 2c_{21}) + xy^2(-c_{12} - 2c_{21} + 2c_{22}) + xy^3(-c_{13} - 2c_{22} + 2c_{23}) + xy^4(-c_{14} - 2c_{23})$$
$$+ x^2(-2c_{20} + 3c_{30}) + x^2y(-2c_{21} - 3c_{30} + 3c_{31}) + x^2y^2(-2c_{22} - 3c_{31} + 3c_{32}) + x^2y^3(-2c_{23} - 3c_{32})$$
$$+ x^3(-3c_{30} + 4c_{40}) + x^3y(-3c_{31} - 4c_{40} + 4c_{41}) + x^3y^2(-3c_{32} - 4c_{41}) + x^4(-4c_{40} + 5c_{50})$$
$$+ x^4y(-4c_{41} - 5c_{50}) + x^5(-5c_{50})$$

$$x\frac{\partial f}{\partial x} + y\frac{\partial \varphi}{\partial x} + z\frac{\partial \xi}{\partial x} =$$
$$= y(b_{11} + b_{21} + b_{31} + b_{41} - 2b_{20} - 3b_{30} - 4b_{40} - 5b_{50} + c_11)$$
$$+ y^2(-b_{11} - 2b_{21} - 3b_{31} - 4b_{41} + 2b_{20} + 6b_{30} + 12b_{40} + 20b_{50} - c_{11} + c_{12})$$
$$+ y^3(b_{21} + 3b_{31} + 6b_{41} - 3b_{30} - 12b_{40} - 30b_{50} - c_{12} + c_{13})$$
$$+ y^4(-3b_{31} - 4b_{41} + 4b_{40} + 20b_{50} - c_{13} + c_{14}) + y^5(b_{41} - 5b_{50} - c_{14})$$
$$+ x(-2a_{02} - 3a_{03} - 4a_{04} - 5a_{05} + 2c_{20})$$
$$+ xy(2a_{02} + 6a_{03} + 12a_{04} + 20a_{05} - a_{11} - 2a_{12} - 3a_{13} - 4a_{14} + 2b_{02} - 2b_{11} + 2b_{12} - 4b_{21} + 2b_{22}$$
$$- 6b_{31} + 2b_{32} - 8b_{41} + 6b_{30} + 12b_{40} + 20b_{50} - c_{11} - 2c_{20} + 2c_{21})$$
$$+ xy^2(-3a_{03} - 12a_{04} - 30a_{05} + 2a_{12} + 6a_{13} + 12a_{14} - a_{21} - 2a_{22} - 3a_{23} - 2b_{12} + 4b_{21} - 4b_{22}$$
$$+ 12b_{31} - 6b_{32} + 24b_{41} - 6b_{30} - 24b_{40} - 60b_{50} - c_{12} - 2c_{21} + 2c_{22})$$
$$+ xy^3(4a_{04} + 20a_{05} - 3a_{13} - 12a_{14} + 2a_{22} + 6a_{23} - a_{31} - 2a_{32} + 2b_{22} - 6b_{31} + 6b_{32} - 24b_{41}$$
$$+ 12b_{40} + 60b_{50} - c_{13} - 2c_{22} + 2c_{23})$$
$$+ xy^4(-5a_{05} + 4a_{14} - 3a_{23} + 2a_{32} - a_{41} - 2b_{32} + 8b_{41} - 20b_{50} - c_{14} - 2c_{23})$$
$$+ x^2(2a_{02} + 6a_{03} + 12a_{04} + 20a_{05} - 2c_{20} + 3c_{30})$$
$$+ x^2y(-6a_{03} - 24a_{04} - 60a_{05} + 2a_{12} + 6a_{13} + 12a_{14} + 3b_{03} - 3b_{12} + 3b_{13} + 3b_{21} - 6b_{22} + 3b_{23}$$
$$+ 9b_{31} - 9b_{32} + 18b_{41} - 3b_{30} - 12b_{40} - 30b_{50} - 2c_{21} - 3c_{30} + 3c_{31})$$
$$+ x^2y^2(12a_{04} + 60a_{05} - 6a_{13} - 24a_{14} + 2a_{22} + 6a_{23} - 3b_{13} + 6b_{22} - 6b_{23} - 9b_{31} + 18b_{32} - 36b_{41}$$
$$+ 12b_{40} + 60b_{50} - 2c_{22} - 3c_{31} + 3c_{32})$$
$$+ x^2y^3(-20a_{05} + 12a_{14} - 6a_{23} + 2a_{32} + 3b_{23} - 9b_{32} + 18b_{41} - 30b_{50} - 2c_{23} - 3c_{32})$$
$$+ x^3(-3a_{03} - 12a_{04} - 30a_{05} - 3c_{30} + 4c_{40})$$
$$+ x^3y(12a_{04} + 60a_{05} - 3a_{13} - 12a_{14} + 4b_{04} - 4b_{13} + 4b_{14} + 4b_{22} - 8b_{23} - 4b_{31} + 12b_{32} - 16b_{41}$$
$$+ 4b_{40} + 20b_{50} - 3c_{31} - 4c_{40} + 4c_{41})$$
$$+ x^3y^2(-30a_{05} + 12a_{14} - 3a_{23} - 4b_{14} + 8b_{23} - 12b_{32} + 16b_{41} - 20b_{50} - 3c_{32} - 4c_{41})$$
$$+ x^4(4a_{04} + 20a_{05} - 4c_{40} + 5c_{50})$$
$$+ x^4y(-20a_{05} + 4a_{14} + 5b_{05} - 5b_{14} + 5b_{23} - 5b_{32} + 5b_{41} - 5b_{50} - 4c_{41} - 5c_{50}) + x^5(-5a_{05} - 5c_{50})$$

Coefficients that are expressed through the parameters A_i , B_i, α_i and β_i in accordance with formulas (5–7), are marked in blue, and those in red are those that give in sum zero.

Similarly, for the second equality from system (8):

$$x\frac{\partial f[y; z(x,y)]}{\partial y} = x\frac{\partial f}{\partial y} + x\frac{\partial f}{\partial z}\frac{\partial z}{\partial y} = x\frac{\partial f}{\partial y} - x\frac{\partial f}{\partial z} =$$

$$= (a_{11} - 2a_{02})(x - x^2 - xy) + (a_{12} - 3a_{03})(x - 2xy + xy^2 - 2x^2 + 2x^2y + x^3)$$
$$+ (a_{13} - 4a_{04})(x - 3xy + 3xy^2 - xy^3 - 3x^2 + 6x^2y - 3x^2y^2 + 3x^3 - 3x^3y - x^4)$$
$$+ (a_{14} - 5a_{05})(x - 4xy + 6xy^2 - 4xy^3 + xy^4 - 4x^2 + 12x^2y - 12x^2y^2 + 4x^2y^3 + 6x^3 - 12x^3y$$
$$+ 6x^3y^2 - 4x^4 + 4x^4y + x^5) + (2a_{20} - a_{11})xy + (2a_{21} - 2a_{12})(xy - x^2y - xy^2)$$
$$+ (2a_{22} - 3a_{13})(xy - 2xy^2 + xy^3 - 2x^2y + 2x^2y^2 + x^3y)$$
$$+ (2a_{23} - 4a_{14})(xy - 3xy^2 + 3xy^3 - xy^4 - 3x^2y + 6x^2y^2 - 3x^2y^3 + 3x^3y - 3x^3y^2 - x^4y)$$
$$+ (3a_{30} - a_{21})xy^2 + (3a_{31} - 2a_{22})(xy^2 - x^2y^2 - xy^3)$$
$$+ (3a_{32} - 3a_{23})(xy^2 - 2xy^3 + xy^4 - 2x^2y^2 + 2x^2y^3 + x^3y^2) + (4a_{40} - a_{31})xy^3$$
$$+ (4a_{41} - 2a_{32})(xy^3 - x^2y^3 - xy^4) + (5a_{50} - a_{41})xy^4 =$$

$$= x(a_{11} - 2a_{02} + a_{12} - 3a_{03} + a_{13} - 4a_{04} + a_{14} - 5a_{05})$$
$$+ xy(-2a_{11} + 2a_{02} - 4a_{12} + 6a_{03} - 6a_{13} + 12a_{04} - 8a_{14} + 20a_{05} + 2a_{20} + 2a_{21} + 2a_{22} + 2a_{23})$$
$$+ xy^2(3a_{12} - 3a_{03} + 9a_{13} - 12a_{04} + 18a_{14} - 30a_{05} - 3a_{21} - 6a_{22} - 9a_{23} + 3a_{30} + 3a_{31} + 3a_{32})$$
$$+ xy^3(-4a_{13} + 4a_{04} - 16a_{14} + 20a_{05} + 4a_{22} + 12a_{23} - 4a_{31} - 8a_{32} + 4a_{40} + 4a_{41})$$
$$+ xy^4(5a_{14} - 5a_{05} - 5a_{23} + 5a_{32} - 5a_{41} + 5a_{50})$$
$$+ x^2(-a_{11} + 2a_{02} - 2a_{12} + 6a_{03} - 3a_{13} + 12a_{04} - 4a_{14} + 20a_{05})$$
$$+ x^2y(4a_{12} - 6a_{03} + 12a_{13} - 24a_{04} + 24a_{14} - 60a_{05} - 2a_{21} - 4a_{22} - 6a_{23})$$
$$+ x^2y^2(-9a_{13} + 12a_{04} - 36a_{14} + 60a_{05} + 6a_{22} + 18a_{23} - 3a_{31} - 6a_{32})$$
$$+ x^2y^3(16a_{14} - 20a_{05} - 12a_{23} + 8a_{32} - 4a_{41}) + x^3(a_{12} - 3a_{03} + 3a_{13} - 12a_{04} + 6a_{14} - 30a_{05})$$
$$+ x^3y(-6a_{13} + 12a_{04} - 24a_{14} + 60a_{05} + 2a_{22} + 6a_{23}) + x^3y^2(18a_{14} - 30a_{05} - 9a_{23} + 3a_{32})$$
$$+ x^4(-a_{13} + 4a_{04} - 4a_{14} + 20a_{05}) + x^4y(8a_{14} - 20a_{05} - 2a_{23}) + x^5(a_{14} - 5a_{05})$$

$$y\frac{\partial\varphi[z(x,y),x]}{\partial y} = y\frac{\partial\varphi}{\partial z}\cdot\frac{\partial z}{\partial y} = -y\frac{\partial\varphi}{\partial z} =$$
$$= -b_{11}xy - b_{12}x^2y - b_{13}x^3y - b_{14}x^4y - 2b_{20}y(1 - x - y) - 2b_{21}xy(1 - x - y)$$
$$- 2b_{22}x^2y(1 - x - y) - 2b_{23}x^3y(1 - x - y) - 3b_{30}y(1 - 2y + y^2 - 2x + 2xy + x^2)$$
$$- 3b_{31}xy(1 - 2y + y^2 - 2x + 2xy + x^2) - 3b_{32}x^2y(1 - 2y + y^2 - 2x + 2xy + x^2)$$
$$- 4b_{40}y(1 - 3y + 3y^2 - y^3 - 3x + 6xy - 3xy^2 + 3x^2 - 3x^2y - x^3)$$
$$- 4b_{41}xy(1 - 3y + 3y^2 - y^3 - 3x + 6xy - 3xy^2 + 3x^2 - 3x^2y - x^3)$$
$$- 5b_{50}y(1 - 4y + 6y^2 - 4y^3 + y^4 - 4x + 12xy - 12xy^2 + 4xy^3 + 6x^2 - 12x^2y + 6x^2y^2 - 4x^3$$
$$+ 4x^3y + x^4) =$$

$$= -b_{11}xy - b_{12}x^2y - b_{13}x^3y - b_{14}x^4y - 2b_{20}(y - xy - y^2) - 2b_{21}(xy - x^2y - xy^2)$$
$$- 2b_{22}(x^2y - x^3y - x^2y^2) - 2b_{23}(x^3y - x^4y - x^3y^2) - 3b_{30}(y - 2y^2 + y^3 - 2xy + 2xy^2 + x^2y)$$
$$- 3b_{31}(xy - 2xy^2 + xy^3 - 2x^2y + 2x^2y^2 + x^3y)$$
$$- 3b_{32}(x^2y - 2x^2y^2 + x^2y^3 - 2x^3y + 2x^3y^2 + x^4y)$$
$$- 4b_{40}(y - 3y^2 + 3y^3 - y^4 - 3xy + 6xy^2 - 3xy^3 + 3x^2y - 3x^2y^2 - x^3y)$$
$$- 4b_{41}(xy - 3xy^2 + 3xy^3 - xy^4 - 3x^2y + 6x^2y^2 - 3x^2y^3 + 3x^3y - 3x^3y^2 - x^4y)$$
$$- 5b_{50}(y - 4y^2 + 6y^3 - 4y^4 + y^5 - 4xy + 12xy^2 - 12xy^3 + 4xy^4 + 6x^2y - 12x^2y^2 + 6x^2y^3 - 4x^3y$$
$$+ 4x^3y^2 + x^4y) =$$

$$= y(-2b_{20} - 3b_{30} - 4b_{40} - 5b_{50}) + y^2(2b_{20} + 6b_{30} + 12b_{40} + 20b_{50}) + y^3(-3b_{30} - 12b_{40} - 30b_{50})$$
$$+ y^4(4b_{40} + 20b_{50}) + y^5(-5b_{50}) + xy(-b_{11} + 2b_{20} - 2b_{21} + 6b_{30} - 3b_{31} + 12b_{40} - 4b_{41} + 20b_{50})$$
$$+ xy^2(2b_{21} - 6b_{30} + 6b_{31} - 24b_{40} + 12b_{41} - 60b_{50}) + xy^3(-3b_{31} + 12b_{40} - 12b_{41} + 60b_{50})$$
$$+ xy^4(4b_{41} - 20b_{50}) + x^2y(-b_{12} + 2b_{21} - 2b_{22} - 3b_{30} + 6b_{31} - 3b_{32} - 12b_{40} + 12b_{41} - 30b_{50})$$
$$+ x^2y^2(2b_{22} - 6b_{31} + 6b_{32} + 12b_{40} - 24b_{41} + 60b_{50}) + x^2y^3(-3b_{32} + 12b_{41} - 30b_{50})$$
$$+ x^3y(-b_{13} + 2b_{22} - 2b_{23} - 3b_{31} + 6b_{32} + 4b_{40} - 12b_{41} + 20b_{50})$$
$$+ x^3y^2(2b_{23} - 3b_{32} + 12b_{41} - 20b_{50}) + x^4y(-b_{14} + 2b_{23} - 3b_{32} + 4b_{41} - 5b_{50})$$

$$z\frac{\partial \xi}{\partial y} =$$
$$= 2c_{02}(y - xy - y^2) + 3c_{03}(y^2 - xy^2 - y^3) + 4c_{04}(y^3 - xy^3 - y^4) + 5c_{05}(y^4 - xy^4 - y^5)$$
$$+ c_{11}(x - x^2 - xy) + 2c_{12}(xy - x^2y - xy^2) + 3c_{13}(xy^2 - x^2y^2 - xy^3) + 4c_{14}(xy^3 - x^2y^3 - xy^4)$$
$$+ c_{21}(x^2 - x^3 - x^2y) + 2c_{22}(x^2y - x^3y - x^2y^2) + 3c_{23}(x^2y^2 - x^3y^2 - x^2y^3) + c_{31}(x^3 - x^4 - x^3y)$$
$$+ 2c_{32}(x^3y - x^4y - x^3y^2) + c_{41}(x^4 - x^5 - x^4y) =$$

$$= y(2c_{02}) + y^2(-2c_{02} + 3c_{03}) + y^3(-3c_{03} + 4c_{04}) + y^4(-4c_{04} + 5c_{05}) + y^5(-5c_{05}) + x(c_{11})$$
$$+ xy(-2c_{02} - c_{11} + 2c_{12}) + xy^2(-3c_{03} - 2c_{12} + 3c_{13}) + xy^3(-4c_{04} - 3c_{13} + 4c_{14})$$
$$+ xy^4(-5c_{05} - 4c_{14}) + x^2(-c_{11} + c_{21}) + x^2y(-2c_{12} - c_{21} + 2c_{22}) + x^2y^2(-3c_{13} - 2c_{22} + 3c_{23})$$
$$+ x^2y^3(-4c_{14} - 3c_{23}) + x^3(-c_{21} + c_{31}) + x^3y(-2c_{22} - c_{31} + 2c_{32}) + x^3y^2(-3c_{23} - 2c_{32})$$
$$+ x^4(-c_{31} + c_{41}) + x^4y(-2c_{32} - c_{41}) + x^5(-c_{41})$$

$$x\frac{\partial f}{\partial y} + y\frac{\partial \varphi}{\partial y} + z\frac{\partial \xi}{\partial y} =$$
$$= y(-2b_{20} - 3b_{30} - 4b_{40} - 5b_{50} + 2c_{02}) + y^2(2b_{20} + 6b_{30} + 12b_{40} + 20b_{50} - 2c_{02} + 3c_{03})$$
$$+ y^3(-3b_{30} - 12b_{40} - 30b_{50} - 3c_{03} + 4c_{04}) + y^4(4b_{40} + 20b_{50} - 4c_{04} + 5c_{05}) + y^5(-5b_{50} - 5c_{05})$$
$$+ x(a_{11} - 2a_{02} + a_{12} - 3a_{03} + a_{13} - 4a_{04} + a_{14} - 5a_{05} + c_{11})$$
$$+ xy(-2a_{11} + 2a_{02} - 4a_{12} + 6a_{03} - 6a_{13} + 12a_{04} - 8a_{14} + 20a_{05} + 2a_{20} + 2a_{21} + 2a_{22} + 2a_{23} - b_{11}$$
$$+ 2b_{20} - 2b_{21} + 6b_{30} - 3b_{31} + 12b_{40} - 4b_{41} + 20b_{50} - 2c_{02} - c_{11} + 2c_{12})$$
$$+ xy^2(3a_{12} - 3a_{03} + 9a_{13} - 12a_{04} + 18a_{14} - 30a_{05} - 3a_{21} - 6a_{22} - 9a_{23} + 3a_{30} + 3a_{31} + 3a_{32}$$
$$+ 2b_{21} - 6b_{30} + 6b_{31} - 24b_{40} + 12b_{41} - 60b_{50} - 3c_{03} - 2c_{12} + 3c_{13})$$
$$+ xy^3(-4a_{13} + 4a_{04} - 16a_{14} + 20a_{05} + 4a_{22} + 12a_{23} - 4a_{31} - 8a_{32} + 4a_{40} + 4a_{41} - 3b_{31} + 12b_{40}$$
$$- 12b_{41} + 60b_{50} - 4c_{04} - 3c_{13} + 4c_{14})$$
$$+ xy^4(5a_{14} - 5a_{05} - 5a_{23} + 5a_{32} - 5a_{41} + 5a_{50} + 4b_{41} - 20b_{50})$$
$$+ x^2(-a_{11} + 2a_{02} - 2a_{12} + 6a_{03} - 3a_{13} + 12a_{04} - 4a_{14} + 20a_{05} - c_{11} + c_{21})$$
$$+ x^2y(4a_{12} - 6a_{03} + 12a_{13} - 24a_{04} + 24a_{14} - 60a_{05} - 2a_{21} - 4a_{22} - 6a_{23} - b_{12} + 2b_{21} - 2b_{22}$$
$$- 3b_{30} + 6b_{31} - 3b_{32} - 12b_{40} + 12b_{41} - 30b_{50} - 2c_{12} - c_{21} + 2c_{22})$$
$$+ x^2y^2(-9a_{13} + 12a_{04} - 36a_{14} + 60a_{05} + 6a_{22} + 18a_{23} - 3a_{31} - 6a_{32} + 2b_{22} - 6b_{31} + 6b_{32} + 12b_{40}$$
$$- 24b_{41} + 60b_{50} - 3c_{13} - 2c_{22} + 3c_{23})$$
$$+ x^2y^3(16a_{14} - 20a_{05} - 12a_{23} + 8a_{32} - 4a_{41} - 3b_{32} + 12b_{41} - 30b_{50} - 4c_{14} - 3c_{23})$$
$$+ x^3(a_{12} - 3a_{03} + 3a_{13} - 12a_{04} + 6a_{14} - 30a_{05} - c_{21} + c_{31})$$
$$+ x^3y(-6a_{13} + 12a_{04} - 24a_{14} + 60a_{05} + 2a_{22} + 6a_{23} - b_{13} + 2b_{22} - 2b_{23} - 3b_{31} + 6b_{32} + 4b_{40}$$
$$- 12b_{41} + 20b_{50} - 2c_{22} - c_{31} + 2c_{32})$$
$$+ x^3y^2(18a_{14} - 30a_{05} - 9a_{23} + 3a_{32} + 2b_{23} - 3b_{32} + 12b_{41} - 20b_{50} - 3c_{23} - 2c_{32})$$
$$+ x^4(-a_{13} + 4a_{04} - 4a_{14} + 20a_{05} - c_{31} + c_{41})$$
$$+ x^4y(8a_{14} - 20a_{05} - 2a_{23} - b_{14} + 2b_{23} - 3b_{32} + 4b_{41} - 5b_{50} - 2c_{32} - c_{41}) + x^5(a_{14} - 5a_{05} - c_{41})$$

Equating the coefficients at the same powers of *x, y* and *z* to zero, we obtain a system of 30 linear equations with 30 unknown parameters.