amsmath $\alpha^2 x_1^2 + 2\alpha^2 x_1 y_1 + \alpha^2 y_1^2 - 2\alpha x_1$

$$\left(-\frac{a\beta(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right)$$

$$-2\alpha x_1 \left(-\frac{a\beta(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right)$$

$$-2\alpha y_1 \left(-\frac{a\beta(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right)$$

$$-2\alpha y_1 \left(-\frac{a\beta(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right) -$$

$$2\alpha + \left(-\frac{a\beta(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right)^2 +$$

$$2\left(-\frac{a\beta(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(x_1-x_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right) \left(-\frac{a\beta(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2} + \frac{a(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} \right)^2 +$$

$$\left(\frac{2a\beta^2(x_1-x_2)(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^3\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} - \frac{a\beta(x_1-x_2)(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2\left((x_1-x_2)^2+(y_1-y_2)^2\right)} + \frac{}{\left(\beta\sqrt{(x_1-x_2)^2}\right.} \right.$$

$$\left(\frac{2a\beta^2(x_1-x_2)(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^3\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} - \frac{a\beta(x_1-x_2)(y_1-y_2)}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2\left((x_1-x_2)^2+(y_1-y_2)^2\right)} + \frac{}{\left(\beta\sqrt{(x_1-x_2)^2}\right.} \right.$$

$$\left(\frac{2a\beta^2(x_1-x_2)^2}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^3\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} - \frac{a\beta(x_1-x_2)^2}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2\left((x_1-x_2)^2+(y_1-y_2)^2\right)} - \frac{}{\left(\beta\sqrt{(x_1-x_2)^2}\right.} \right.$$

$$\left(\frac{2a\beta^2(y_1-y_2)^2}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^3\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}} - \frac{a\beta(y_1-y_2)^2}{\left(\beta\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}+1\right)^2\left((x_1-x_2)^2+(y_1-y_2)^2\right)} - \frac{}{\left(\beta\sqrt{(x_1-x_2)^2}\right.} \right.$$