Step	Algorithm: $y := \alpha x + y$
1a	$\{ y = \widehat{y} \}$
4	$x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right)$ where x_B has 0 rows, y_B has 0 rows
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \right\}$
3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \wedge m(x_B) < m(x) \right\}$
5a	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$ where χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} \widehat{y}_0 \\ \widehat{\psi}_1 \\ \alpha x_2 + \widehat{y}_2 \end{array} \right) \right\}$
8	$\psi_1 := \alpha \chi_1 + \psi_1$
7	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} \widehat{y}_0 \\ \alpha \chi_1 + \widehat{\psi}_1 \\ \alpha x_2 + \widehat{y}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \wedge \neg(m(x_B) < m(x)) \right\}$
1b	$\{ y = \alpha x + \widehat{y} \}$

Step	Algorithm: $y := \alpha x + y$
1a	$\{ \qquad \}$
4	where
2	$\left\{ \qquad \right\}$
3	while do
2,3	$\left\{ \qquad \wedge \qquad \right\}$
5a	where
6	$\left\{ \qquad \right\}$
8	
7	$\left\{ \qquad \right\}$
5b	
2	$\left\{ \qquad \right\}$
	endwhile
2,3	$\left\{ \qquad \wedge \neg(\qquad) \qquad \right\}$
1b	$\{ \qquad \}$

Step	Algorithm: $y := \alpha x + y$
1a	$\{ y = \widehat{y} \qquad \}$
4	where
2	$\left\{ \qquad \right\}$
3	while do
2,3	$\left\{ \qquad \wedge \qquad \right\}$
5a	where
6	$\left\{ \qquad \right\}$
8	
7	$\left\{ \qquad \right\}$
5b	
2	$\left\{ \qquad \right\}$
	endwhile
2,3	$\left\{ \qquad \wedge \neg(\qquad) \qquad \right\}$
1b	$\{ y = \alpha x + \widehat{y} \qquad \}$

Step	Algorithm: $y := \alpha x + y$
1a	$\{ y = \widehat{y} \}$
4	where
2	$\left\{ \begin{pmatrix} y_T \\ \hline y_B \end{pmatrix} = \begin{pmatrix} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{pmatrix} \right\}$
3	while do
2,3	$\left\{ \begin{pmatrix} y_T \\ \hline y_B \end{pmatrix} = \begin{pmatrix} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{pmatrix} \wedge \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \begin{pmatrix} y_T \\ \hline y_B \end{pmatrix} = \begin{pmatrix} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{pmatrix} \right\}$
	endwhile
2,3	$\left\{ \begin{pmatrix} y_T \\ \hline y_B \end{pmatrix} = \begin{pmatrix} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{pmatrix} \wedge \neg(\quad) \right\}$
1b	$\{ y = \alpha x + \widehat{y} \}$

Step	Algorithm: $y := \alpha x + y$
1a	$\{ y = \widehat{y} \}$
4	where
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \right\}$
3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \wedge m(x_B) < m(x) \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \wedge \neg(m(x_B) < m(x)) \right\}$
1b	$\{ y = \alpha x + \widehat{y} \}$

Step	Algorithm: $y := \alpha x + y$
1a	$\{ y = \widehat{y} \}$
4	$x \rightarrow \left(\frac{x_T}{x_B} \right)$, $y \rightarrow \left(\frac{y_T}{y_B} \right)$ where x_B has 0 rows, y_B has 0 rows
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \right\}$
3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \wedge m(x_B) < m(x) \right\}$
5a	where
6	$\left\{ \right\}$
8	
7	$\left\{ \right\}$
5b	
2	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B} \right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B} \right) \wedge \neg (m(x_B) < m(x)) \right\}$
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Step	Algorithm: $y := \alpha x + y$
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3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B}\right) \wedge m(x_B) < m(x) \right\}$
5a	$\left(\frac{x_T}{x_B}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\frac{y_T}{y_B}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$ where χ_1 has 1 row, ψ_1 has 1 row
6	$\{ \}$
8	
7	$\{ \}$
5b	$\left(\frac{x_T}{x_B}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right)$, $\left(\frac{y_T}{y_B}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$
2	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\frac{y_T}{y_B}\right) = \left(\frac{\widehat{y}_T}{\alpha x_B + \widehat{y}_B}\right) \wedge \neg(m(x_B) < m(x)) \right\}$
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Step	Algorithm: $y := \alpha x + y$
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2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \right\}$
3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \wedge m(x_B) < m(x) \right\}$
5a	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$ where χ_1 has 1 row, ψ_1 has 1 row
6	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} \widehat{y}_0 \\ \widehat{\psi}_1 \\ \alpha x_2 + \widehat{y}_2 \end{array} \right) \right\}$
8	
7	$\{ \}$
5b	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \wedge \neg (m(x_B) < m(x)) \right\}$
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5a	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array} \right)$ where χ_1 has 1 row, ψ_1 has 1 row
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8	
7	$\left\{ \left(\begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right) = \left(\begin{array}{c} \widehat{y}_0 \\ \alpha \chi_1 + \widehat{\psi}_1 \\ \alpha x_2 + \widehat{y}_2 \end{array} \right) \right\}$
5b	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array} \right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array} \right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array} \right)$
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	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array} \right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array} \right) \wedge \neg (m(x_B) < m(x)) \right\}$
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Step	Algorithm: $y := \alpha x + y$
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2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array}\right) \right\}$
3	while $m(x_B) < m(x)$ do
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array}\right) \wedge m(x_B) < m(x) \right\}$
5a	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$ where χ_1 has 1 row, ψ_1 has 1 row
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8	$\psi_1 := \alpha \chi_1 + \psi_1$
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5b	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$
2	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array}\right) \right\}$
	endwhile
2,3	$\left\{ \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) = \left(\begin{array}{c} \widehat{y}_T \\ \hline \alpha x_B + \widehat{y}_B \end{array}\right) \wedge \neg(m(x_B) < m(x)) \right\}$
1b	$\{ y = \alpha x + \widehat{y} \}$

	Algorithm: $y := \alpha x + y$
	$x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right)$, $y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$ where x_B has 0 rows, y_B has 0 rows
	while $m(x_B) < m(x)$ do
	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$ where χ_1 has 1 row, ψ_1 has 1 row
	$\psi_1 := \alpha \chi_1 + \psi_1$
	$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right)$, $\left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$
	endwhile

Algorithm: $y := \alpha x + y$

$$x \rightarrow \left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right), \; y \rightarrow \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right)$$

where x_B has 0 rows, y_B has 0 rows

while $m(x_B) < m(x)$ **do**

$$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \rightarrow \left(\begin{array}{c} x_0 \\ \chi_1 \\ \hline x_2 \end{array}\right), \; \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \rightarrow \left(\begin{array}{c} y_0 \\ \psi_1 \\ \hline y_2 \end{array}\right)$$

where χ_1 has 1 row, ψ_1 has 1 row

$$\psi_1 := \alpha \chi_1 + \psi_1$$

$$\left(\begin{array}{c} x_T \\ \hline x_B \end{array}\right) \leftarrow \left(\begin{array}{c} x_0 \\ \hline \chi_1 \\ x_2 \end{array}\right), \; \left(\begin{array}{c} y_T \\ \hline y_B \end{array}\right) \leftarrow \left(\begin{array}{c} y_0 \\ \hline \psi_1 \\ y_2 \end{array}\right)$$

endwhile