

(a) $y = f(x) \rightarrow y = -f(x) + 2$

Order can be reversed:

(1) Reflection in the x -axis.

(2) Translation $\begin{pmatrix} 0 \\ 2 \end{pmatrix}$

(b) $y = f(x) \rightarrow y = f(x + 2) + 7$

Order can be reversed:

(1) Translation $\begin{pmatrix} -2 \\ 0 \end{pmatrix}$

(2) Translation $\begin{pmatrix} 0 \\ 7 \end{pmatrix}$

Or a single transformation of $\begin{pmatrix} -2 \\ 7 \end{pmatrix}$

(b) $y = f(x) \rightarrow y = f(2x - 8)$

Option 1:

(1) Translation $\begin{pmatrix} 8 \\ 0 \end{pmatrix}$.

(2) Horizontal stretch, s.f. $\frac{1}{2}$

Option 2:

(1) Horizontal stretch, s.f. $\frac{1}{2}$.

(2) Translation $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$.

(d) $y = f(x) \rightarrow y = f(4 - x)$

Option 1:

(1) Translation $\begin{pmatrix} -4 \\ 0 \end{pmatrix}$.

(2) Reflection in the y -axis.

Option 2:

(1) Reflection in the y -axis.

(2) Translation $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$.

(e) $y = f(x) \rightarrow y = f\left(\frac{1}{4}x + 5\right)$

Option 1:

(1) Translation $\begin{pmatrix} -5 \\ 0 \end{pmatrix}$.

(2) Horizontal stretch, s.f. 4.

Option 2:

(1) Horizontal stretch, s.f. 4.

(2) Translation $\begin{pmatrix} -\frac{5}{4} \\ 0 \end{pmatrix}$.

(f) $y = f(x) \rightarrow y = 3f(2x - 4)$

Note: The vertical stretch can be performed at any time; it doesn't have to be (3)

Option 1:

(1) Translation $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$.

(2) Horizontal stretch, s.f. $\frac{1}{2}$.

(3) Vertical stretch, s.f. 3

Option 2:

(1) Horizontal stretch, s.f. $\frac{1}{2}$.

(2). Translation $\begin{pmatrix} 2 \\ 0 \end{pmatrix}$

(3) Vertical stretch, s.f. 3