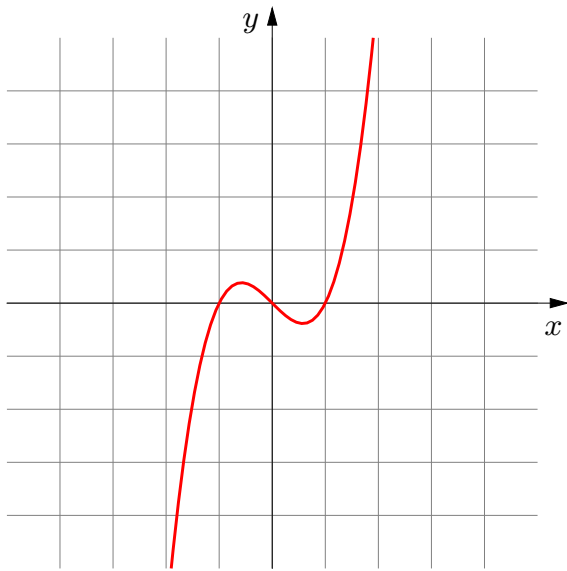
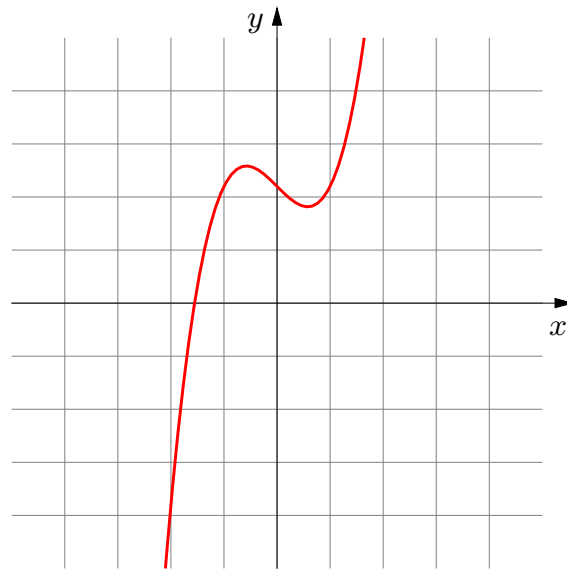


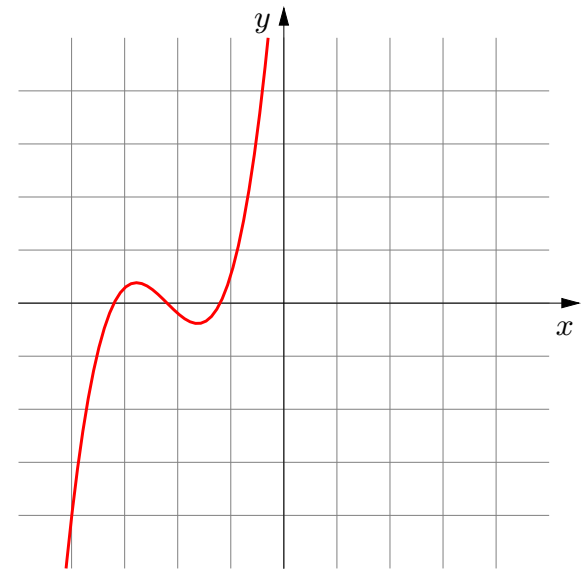
Graph Transformations



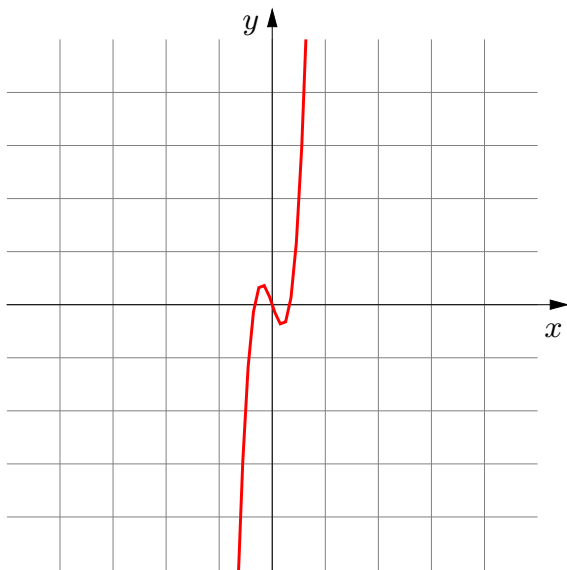
$f(x)$
Original Function



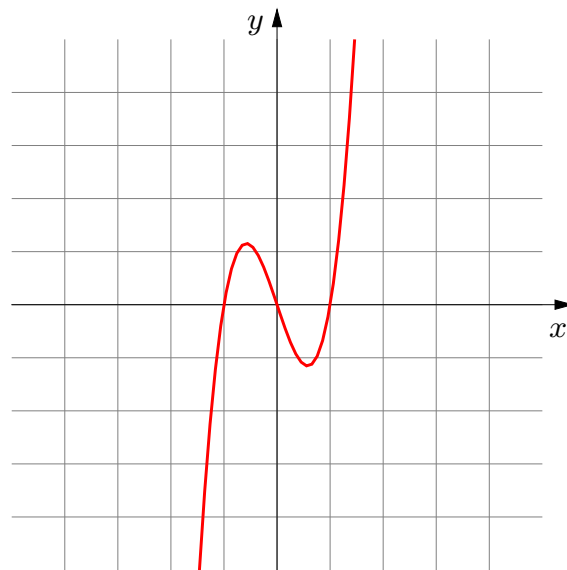
$f(x) + a$
Moved Upwards (\uparrow) by a units



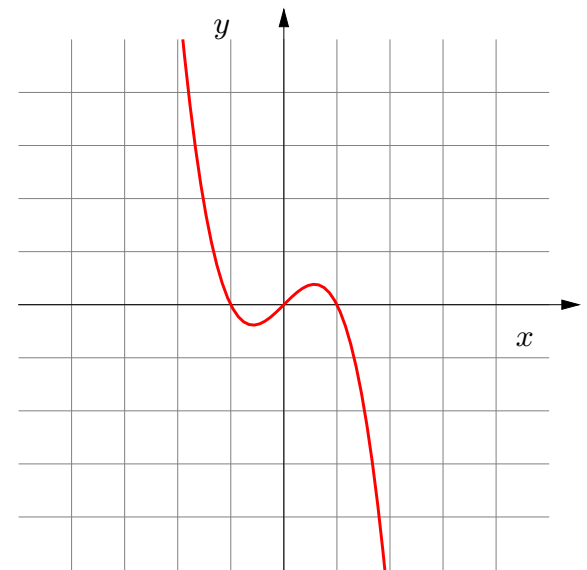
$f(x + a)$
Moved Left (\leftarrow) by a units



$f(ax)$
Stretched Horizontally (\leftrightarrow), scale factor $\frac{1}{a}$



$af(x)$
Stretched Vertically (\updownarrow), scale factor a



$-f(x)$
Reflected in the x -axis