$$\vec{x}^{(l+1)} = f\left[\hat{W}^{(l)}\vec{x}^{(l)} + \vec{b}^{(l)}\right] \tag{1}$$

$$\vec{x}^{(l+1)} = f\left[A\left(\hat{W}^{(l)}\vec{x}^{(l)}\right) + \vec{b}^{(l)}\right] \tag{2}$$

Arbitrary layer l with n neurons

$$\vec{x}^{(l)} = \begin{bmatrix} x_0^{(l)} \\ x_1^{(l)} \\ \vdots \\ \vdots \\ x_{n-2}^{(l)} \\ x_{n-1}^{(l)} \end{bmatrix} \tag{3}$$