MLP output $\vec{y}$ computed from the input $\vec{x}$ via the hidden layers with weight matrices $W_{h,i}$ and biases b_i. The last layer's output, the 'classifier layer', is linear:

$$\vec{h}_1 = \tanh\left(W_{h,1} \cdot \vec{x} + b_1\right)$$
$$\vec{h}_2 = \tanh\left(W_{h,2} \cdot \vec{h}_1 + b_2\right)$$
$$\vec{y} = W_{c,1} \cdot \vec{h}_2 + b_c$$

This means explicitly for our tiny MLP, the entire network linear algebra is only:

$$\vec{h}_1 = \tanh\left(\begin{bmatrix} 0.0003 & -0.0415 & 0.1163 & 0.1084 & -0.0224 & -0.0048 & -0.0140 & 1.4651 & -0.0201 & 0.0031 & -0.0043 & -1.8106 & -0.2366 & 5.9832 \\ 0.0880 & 0.0435 & -0.2923 & -0.2239 & 0.6384 & -0.0173 & -1.2846 & -2.6617 & -3.7816 & -0.0901 & -0.0637 & -41.2838 & 1.0637 & -2.7138 \\ 0.0066 & -0.0332 & 0.0970 & 0.0237 & -0.0163 & 0.0006 & -0.0953 & 0.1521 & -0.0633 & -0.0039 & -0.0032 & -8.7037 & 0.0627 & 5.9792 \\ 0.4774 & 0.0790 & 0.1947 & -0.0077 & -0.0422 & -0.1480 & -0.4874 & 0.9058 & -0.0304 & 0.6794 & 0.0026 & -7.0026 & -0.0518 & 0.6807 \\ -2.3685 & 0.1230 & -0.3037 & -0.2257 & -0.1057 & 0.4555 & 0.2139 & -2.7661 & 0.0088 & -0.0190 & -0.0399 & -46.5927 & 0.5725 & 1.3390 \\ 3.0361 & -0.3095 & 0.4148 & 0.2889 & 0.1131 & -0.5641 & 0.2565 & 4.0376 & 0.0038 & 0.0057 & 0.0250 & -1.9740 & -0.8505 & -0.3050 \\ -0.0007 & 0.0373 & -0.0822 & -0.0411 & 0.0392 & -0.0008 & 0.0045 & -0.2551 & 0.0363 & 0.0011 & 0.0012 & 3.3235 & 0.0365 & 7.4300 \\ -0.5637 & -0.2177 & -0.1900 & -0.0121 & -0.0212 & 0.1815 & 0.6383 & -0.9243 & 0.0173 & 0.6583 & -0.0176 & 6.8334 & 0.0988 & -0.1857 \\ 0.0124 & 0.0514 & -0.0521 & -0.0384 & 0.0852 & -0.0077 & -0.1075 & 0.1099 & 0.0109 & 0.0012 & -0.0045 & -1.9850 & 0.0829 & -6.5979 \\ 0.0035 & 0.2370 & -0.0707 & -0.0537 & 0.0311 & -0.0123 & -0.3245 & 0.7531 & 0.0161 & 0.0060 & -0.0080 & 55.8442 & -0.0379 & 5.8534 \end{bmatrix} \cdot \vec{x} + \begin{bmatrix} -3.8908 \\ 2.1396 \\ -3.7169 \\ 1.9176 \\ -0.4426 \\ -0.5637 \\ -4.7682 \\ -2.0318 \\ 3.6808 \\ -3.4718 \end{bmatrix}\right)$$

$$\vec{h}_2 = \tanh\left(\begin{bmatrix} -11.8171 & 0.0509 & -32.8451 & 0.4450 & 0.9514 & 0.5636 & -69.3784 & -0.6752 & 23.6113 & -0.5462 \\ -1.4536 & 0.2127 & 0.2064 & -0.3633 & 2.6491 & 3.5722 & 0.3244 & 0.4235 & 0.8097 & 2.4959 \\ 1.0605 & -0.0263 & 3.0486 & 0.1433 & -0.2945 & 0.0257 & 6.5291 & 0.0119 & -2.2014 & 0.2525 \\ -0.4485 & -0.0134 & -0.5162 & 0.0028 & 0.4055 & 0.3216 & -1.6871 & -0.0173 & 0.0269 & -0.0086 \\ -0.6432 & 0.1505 & -0.0124 & 1.1803 & 0.7261 & 1.6116 & 2.1777 & -0.9340 & -2.4905 & 1.5946 \\ 0.6254 & -0.0525 & 0.9101 & 0.4822 & -1.5687 & -1.1096 & 1.4350 & -0.3800 & 0.8382 & -0.5642 \\ -1.0095 & -0.0769 & 0.6342 & 2.9646 & 0.8639 & 0.2500 & -0.2651 & -2.0542 & 0.4443 & -2.0329 \\ 0.4431 & 0.1548 & -0.4257 & -0.2394 & -1.3750 & 4.1027 & 2.1743 & -0.0765 & 2.5056 & -1.2491 \\ -4.5400 & -0.1466 & -13.5318 & 0.1675 & -0.6179 & -0.2747 & -18.7712 & 0.0519 & 5.1431 & -0.6828 \\ -1.8561 & 0.1558 & 1.7501 & -2.0776 & 0.1176 & 1.1394 & 2.8292 & 1.3066 & 5.0734 & 0.3596 \end{bmatrix} \cdot \vec{h}_1 + \begin{bmatrix} -5.2185 \\ -2.3008 \\ -1.6426 \\ 1.3092 \\ -3.0285 \\ -0.4950 \\ -1.6795 \\ -5.4368 \\ -5.7917 \\ -0.8031 \end{bmatrix}\right)$$

$$\vec{y} = \begin{bmatrix} 6.6188 & 2.8498 & -5.7814 & -18.8070 & 3.8879 & 18.4718 & 7.9414 & -5.0696 & 7.2724 & -5.9801 \\ -6.6188 & -2.8498 & 5.7814 & 18.8070 & -3.8879 & -18.4718 & -7.9414 & 5.0696 & -7.2724 & 5.9801 \end{bmatrix} \cdot \vec{h}_1 + \begin{bmatrix} 1.3858 \\ -1.3858 \end{bmatrix}$$