Soultion:

From 2.1 we already know that:

$$\vec{a}^{(1)} = W^{(1)}\vec{a}^{(0)} + \vec{b}^{(1)} \tag{1}$$

$$\vec{a}^{(2)} = W^{(2)}\vec{a}^{(1)} + \vec{b}^{(2)} \tag{2}$$

$$\vec{a}^{(3)} = W^{(3)}\vec{a}^{(2)} + \vec{b}^{(3)} \tag{3}$$

Therefore, we have (3):

$$\vec{a}^{(3)} = W^{(3)}\vec{a}^{(2)} + \vec{b}^{(3)} \tag{3}$$

Put (2) into (3), we have:

$$\vec{a}^{(3)} = W^{(3)}\left(W^{(2)}\vec{a}^{(1)} + \vec{b}^{(2)}\right) + \vec{b}^{(3)} \tag{4}$$

and we put (1) into (4), we have:

$$\vec{a}^{(3)} = W^{(3)}(W^{(2)}(W^{(1)}\vec{a}^{(0)} + \vec{b}^{(1)}) + \vec{b}^{(2)}) + \vec{b}^{(3)}$$

$$= W^{(3)}(W^{(2)}W^{(1)}\vec{a}^{(0)} + W^{(2)}\vec{b}^{(1)} + \vec{b}^{(2)}) + \vec{b}^{(3)}$$

$$= W^{(3)}W^{(2)}W^{(1)}\vec{a}^{(0)} + W^{(3)}W^{(2)}\vec{b}^{(1)} + W^{(3)}\vec{b}^{(2)} + \vec{b}^{(3)}$$

According to this question, we already know the weight and bias of network 1, which means we can know:

$$W^{(3)}, W^{(2)},\ \ W^{(1)},\ \ \vec{b}^{(1)}, \vec{b}^{(2)},\ \ \vec{b}^{(3)}$$

So, according to the definition of this question "two networks are equivalent", we get the answer：

$$\widetilde{W} = W^{(3)}W^{(2)}W^{(1)}$$

$$\tilde{b} = W^{(3)}W^{(2)}\vec{b}^{(1)} + W^{(3)}\vec{b}^{(2)} + \vec{b}^{(3)}$$