Back Key Concepts on Deep Neural Networks
Graded Quiz • 50 min

Due Jun 25, 11:59 PM PDT

Congratulations! You passed!

Grade received 90% **Latest Submission Grade** 90% **To pass** 80% or higher

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1. We use the "cache" in our implementation of forward and backward propagation to pass useful values to the next layer in the forward propagation. True/False? **1 / 1 point**

- (•) False
- ( ) True

Expand

Correct
Correct. The "cache" is used in our implementation to store values computed during forward propagation to be used in backward propagation.

2. Which of the following are “parameters” of a neural network? (Check all that apply.) **0 / 1 point**

- [x] $b^{[l]}$ the bias vector.

  Correct
  Correct. The weight matrices and the bias vectors are the parameters of the network.

- [ ] $g^{[l]}$ the activation functions.
- [x] $W^{[l]}$ the weight matrices.

  Correct
  Correct. The weight matrices and the bias vectors are the parameters of the network.

- [x] L the number of layers of the neural network.

  This should not be selected
  Incorrect. The weight matrices and the bias vectors are the parameters of the network. This is a hyperparameter.

Expand

Incorrect
You chose the extra incorrect answers.

3. Which of the following statements is true? **1 / 1 point**

- (•) The deeper layers of a neural network are typically computing more complex features of the input than the earlier layers.
- ( ) The earlier layers of a neural network are typically computing more complex features of the input than the deeper layers.

Expand

Correct

4. We can not use vectorization to calculate $da^{[l]}$ in backpropagation, we must use a for loop over all the examples. True/False? **1 / 1 point**

- ( ) True
- (•) False

Expand

Correct
Correct. We can use vectorization in backpropagation to calculate $dA^{[l]}$ for each layer. This computation is done over all the training examples.

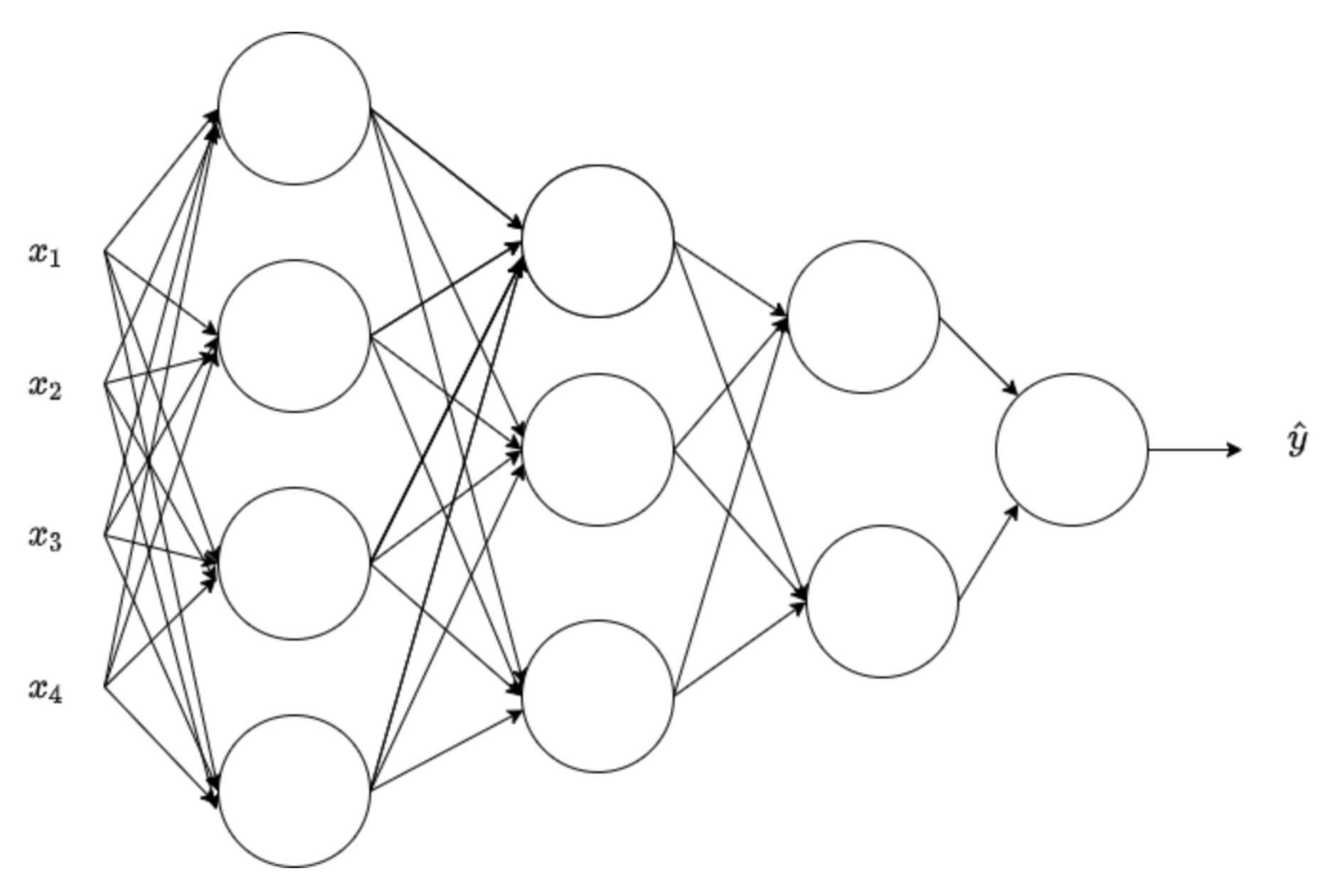
5. Assume we store the values for $n^{[l]}$ in an array called layer_dims, as follows: layer_dims = $[n_x, 4,3,2,1]$. So layer 1 has four hidden units, layer 2 has 3 hidden units and so on. Which of the following for-loops will allow you to initialize the parameters for the model? **1 / 1 point**

- (•)
```
for i in range(1, len(layer_dims)):
parameter['W' + str(i)] = np.random.randn(layer_dims[i], layer_dims[i-1]) * 0.01
parameter['b' + str(i)] = np.random.randn(layer_dims[i], 1) * 0.01
```
- ( )
```
for i in range(1, len(layer_dims)):
parameter['W' + str(i)] = np.random.randn(layer_dims[i-1], layer_dims[i]) * 0.01
parameter['b' + str(i)] = np.random.randn(layer_dims[i], 1) * 0.01
```
- ( )
```
for i in range(1, len(layer_dims)/2):
parameter['W' + str(i)] = np.random.randn(layer_dims[i], layer_dims[i-1]) * 0.01
parameter['b' + str(i)] = np.random.randn(layer_dims[i], 1) * 0.01
```
- ( )
```
for i in range(1, len(layer_dims)/2):
parameter['W' + str(i)] = np.random.randn(layer_dims[i], layer_dims[i-1]) * 0.01
parameter['b' + str(i)] = np.random.randn(layer_dims[i-1], 1) * 0.01
```

Expand

Correct

6. Consider the following neural network: **1 / 1 point**



What are all the values of $n^{[0]}, n^{[1]}, n^{[2]}, n^{[3]}$ and $n^{[4]}$?

- (•) 4, 4, 3, 2, 1
- ( ) 4, 3, 2
- ( ) 4, 3, 2, 1
- ( ) 4, 4, 3, 2

Expand

Correct
Yes. The $n^{[l]}$ are the number of units in each layer, notice that $n^{[0]} = n_x$.

7. During forward propagation, for the value of $A^{[l]}$ the value is used of $Z^{[l]}$ with the activation function $g^{[l]}$. During backward propagation we calculate $dA^{[l]}$ from $Z^{[l]}$. **1 / 1 point**

- ( ) True
- (•) False

Expand

Correct
Correct. During backward propagation we are interested in computing $dW^{[l]}$ and $db^{[l]}$. For that we use $g'^{L}, dZ^{[l]}, Z^{[l]}$, and $W^{[l]}$.

8. There are certain functions with the following properties: **1 / 1 point**

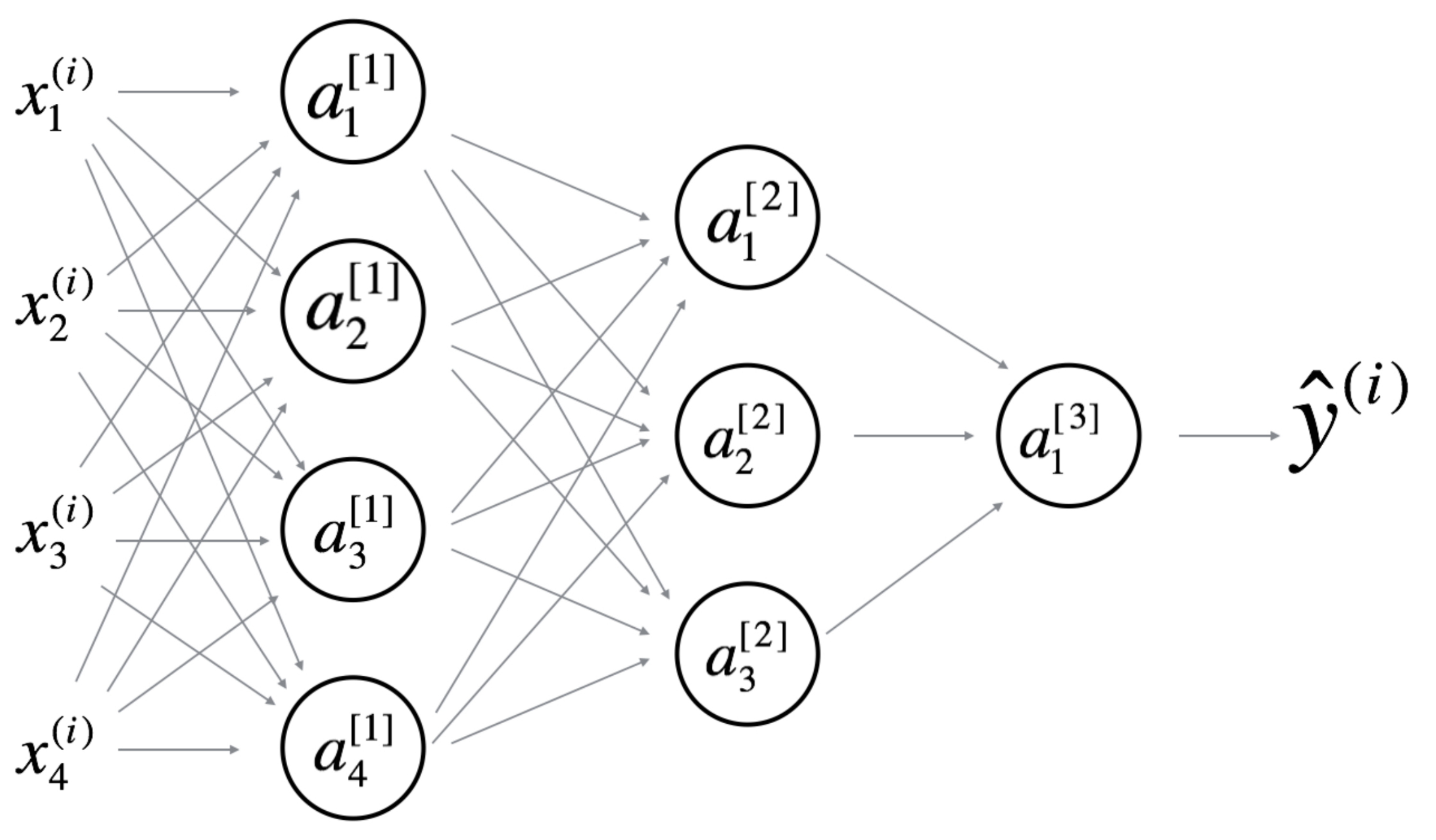
(i) To compute the function using a shallow network circuit, you will need a large network (where we measure size by the number of logic gates in the network), but (ii) To compute it using a deep network circuit, you need only an exponentially smaller network. True/False?

- (•) True
- ( ) False

Expand

Correct

9. Consider the following 2 hidden layer neural network: **1 / 1 point**



Which of the following statements are True? (Check all that apply).

- [ ] $W^{[2]}$ will have shape (3, 1)
- [ ] $W^{[3]}$ will have shape (3, 1)
- [x] $b^{[2]}$ will have shape (3, 1)

  Correct
  Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [x] $W^{[1]}$ will have shape (4, 4)

  Correct
  Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [ ] $b^{[1]}$ will have shape (3, 1)
- [x] $W^{[2]}$ will have shape (3, 4)

  Correct
  Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [ ] $b^{[3]}$ will have shape (3, 1)
- [ ] $W^{[1]}$ will have shape (3, 4)
- [ ] $b^{[2]}$ will have shape (1, 1)
- [x] $b^{[1]}$ will have shape (4, 1)

  Correct
  Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

- [x] $W^{[3]}$ will have shape (1, 3)

  Correct
  Yes. More generally, the shape of $W^{[l]}$ is $(n^{[l]}, n^{[l-1]})$.

- [x] $b^{[3]}$ will have shape (1, 1)

  Correct
  Yes. More generally, the shape of $b^{[l]}$ is $(n^{[l]}, 1)$.

Expand

Correct
Great, you got all the right answers.

10. Whereas the previous question used a specific network, in the general case what is the dimension of $b^{[l]}$, the bias vector associated with layer l? **1 / 1 point**

- (•) $b^{[l]}$ has shape $(n^{[l]}, 1)$
- ( ) $b^{[l]}$ has shape $(n^{[l+1]}, 1)$
- ( ) $b^{[l]}$ has shape $(1, n^{[l]})$
- ( ) $b^{[l]}$ has shape $(1, n^{[l-1]})$

Expand

Correct
True. $b^{[l]}$ is a column vector with the same number of rows as units in the respective layer.