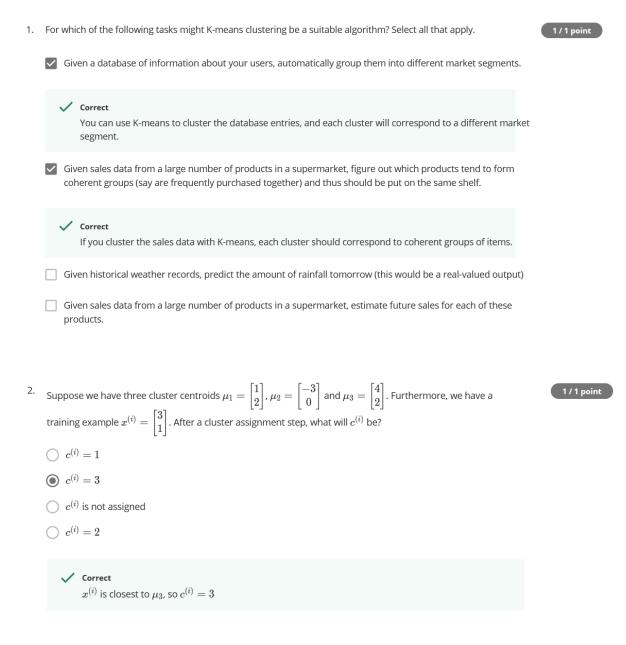
## Quiz

## **Unsupervised Learning**



3.	K-means is an iterative algorithm, and two of the following steps are repeatedly carried out in its inner-loop.  1/1 point Which two?			
	Feature scaling, to ensure each feature is on a comparable scale to the others.			
	$lacksquare$ The cluster assignment step, where the parameters $c^{(i)}$ are updated.			
	✓ Correct  This is the correst first step of the K-means loop.			
	Using the elbow method to choose K.			
	$lacksquare$ Move the cluster centroids, where the centroids $\mu_k$ are updated.			
	✓ Correct  The cluster update is the second step of the K-means loop.			
4.	Suppose you have an unlabeled dataset $\{x^{(1)},\dots,x^{(m)}\}$ . You run K-means with 50 different random			
	initializations, and obtain 50 different clusterings of the  data. What is the recommended way for choosing which one of			
	these 50 clusterings to use?			
	Manually examine the clusterings, and pick the best one.			
	Plot the data and the cluster centroids, and pick the clustering that gives the most "coherent" cluster centroids.			
	Use the elbow method.			
	$igotimes$ Compute the distortion function $J(c^{(1)},\ldots,c^{(m)},\mu_1,\ldots,\mu_k)$ , and pick the one that minimizes this.			
	Correct A lower value for the distortion function implies a better clustering, so you should choose the clustering with the smallest value for the distortion function.			

5.	Which	of the following statements are true? Select all that apply.	1/1 point
		nce K-Means is an unsupervised learning algorithm, it cannot overfit the data, and thus it is always better to ve as large a number of clusters as is computationally feasible.	
	Th	e standard way of initializing K-means is setting $\mu_1=\dots=\mu_k$ to be equal to a vector of zeros.	
	_	we are worried about K-means getting stuck in bad local optima, one way to ameliorate (reduce) this problem if we try using multiple random initializations.	
	<b>✓</b>	Correct Since each run of K-means is independent, multiple runs can find different optima, and some should avoid ba local optima.	d
	_	r some datasets, the "right" or "correct" value of K (the number of clusters) can be ambiguous, and hard even ra human expert looking carefully at the data to decide.	
	<b>✓</b>	Correct In many datasets, different choices of K will give different clusterings which appear quite reasonable. With no labels on the data, we cannot say one is better than the other.	