Quiz Instructions

Question 1   1 pts

Let $f(x) = -4x^2 - 10x$. What value of x will maximize the function f(x)? Please input your answer as a decimal number.

[   ]

Question 2   1 pts

	Man	Woman	Child	Total
First Class	10	15	5	30
Second Class	25	30	10	65
Third Class	30	35	15	80
Total	65	80	30	175

Given that a passenger selected at random was a man, find the probability that the passenger traveled in the second class.

○ $\frac{6}{35}$

○ $\frac{5}{13}$

○ $\frac{1}{7}$

○ $\frac{13}{35}$

Question 3 — 1 pts

Suppose we have 5 input features, x_1, x_2, x_3, x_4, x_5, and each feature can take on 3 possible values. What is the cardinality of this instance space?

○ 125

○ 243

○ 25

○ 32

Question 4 — 1 pts

Let x_1, x_2, x_3, x_4 be the input features to the model and y be the label determined by the function $f(x_1, x_2, x_3, x_4)$ such that $y = f(x_1, x_2, x_3, x_4)$.

Suppose the 4 input features are, x1, x2, x3, x4, can each take on 3 possible values and the label y can be either '+' or '-'. What is the total number of possible functions?

○ 2^{64}

○ 3^{16}

○ 4^9

○ 2^{81}

Question 5   1 pts

As seen in question 4 the space of all possible functions is far too large! To deal with this, learners usually consider only a subset of all the possible functions. This is called the **hypothesis space H**.

Suppose the hypothesis space we are considering is the space of all conjunctions over k input features, x_1, x_2, x_3, x_4, x_5, for k=0,1,2,3,4,5. For example, $x_1 \wedge x_5$ is an element in the hypothesis space. $x_2 \vee x_3$ is not.

What is the cardinality of this hypothesis space H?

○ 243

○ 16

○ 32

○ 81