Question 1   1 / 1 point

Let

$$f(n) = 2n^2 + 10,$$

$$g(n) = n \log n.$$

Choose all the statements that are correct.

○

$$f(n) = O(g(n))$$

✓

$$f(n) = \Omega(g(n))$$

○

$$f(n) = \Theta(g(n))$$

○ None of the statements is correct.

Question 2   1 / 1 point

Please choose **all** correct asymptotical relations. Note that there may be multiple correct

Question 2

1 / 1 point

Please choose **all** correct asymptotical relations. Note that there may be multiple correct answers. Select all that apply. Missing any correct choices will result in no points for the question.

☐
$$= 2^{n/2} \cdot 2^{n/2}$$
$$2^n - n^3 - 1000 = O(2^{n/2})$$

☑
$$n/100 + 200 = O(n/3)$$

☑
$$n/100 + 200 = \Omega(n/2)$$

☐
a set of functions
$$O(2^n) = 2^{n/2}$$

☑
$$2n + 4\log n = O(n)$$

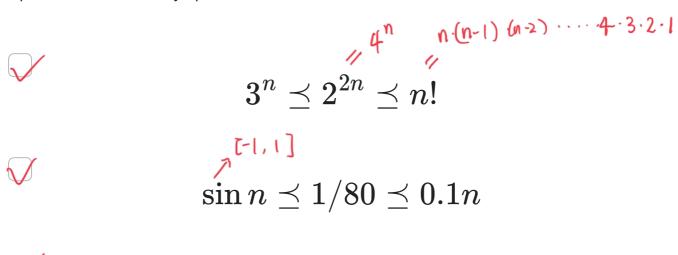## Question 3

1 / 1 point

Please select **all** correct asymptotic order of the functions, sorted from smallest to the

Question 3   1 / 1 point

Please select **all** correct asymptotic order of the functions, sorted from smallest to the largest asymptotically. Note that if we have f(n) =O(g(n)) and g(n)= O(h(n)), it implies that f(n) is asymptotically smaller than or equal to g(n), and g(n) is asymptotically smaller than or equal to h(n), therefore,

$$f(n) \preceq g(n) \preceq h(n)$$

represents a correct asymptotic order.

☑ (handwritten: $=4^n$ $n \cdot (n-1)(n-2) \cdots 4 \cdot 3 \cdot 2 \cdot 1$)

$$3^n \preceq 2^{2n} \preceq n!$$

☑ (handwritten: $[-1, 1]$)

$$\sin n \preceq 1/80 \preceq 0.1n$$

☑

$$\log n \preceq 0.5n^2 \preceq 2^n$$

☑ (handwritten: see Piazza Notes)

$$\log_2 n \preceq \log_{10} n \preceq \log_4 n$$

Question 4   1 / 1 point

If f(n) = O(g(n)) and g(n) = O(f(n)), then f(n) = g(n).

○ True

✓ False

$$f(n) = \Theta(g(n))$$

Question 5   1 / 1 point

If f(n) = O(g(n)) and g(n) = O(h(n)), then f(n) = O(h(n)).

✓ True

○ False

Question 6   1 / 1 point

If

$$f(n) = \Theta(g(n))$$

and h(n)=O(g(n)), then h(n)=O(f(n)).

✓ True

○ False