CS2223 D Term 2020 Quiz 10

(1 point) Question 1: "My brain is open. . . ."
I pledge that I am taking this quiz on my own, with help from no one else and no notes:

(3 points) Question 2: Which of the following sequences of partial results emerges when Horner's Rule is used to compute $f(-2)$ where $f(x) = 2x^4 - 5x^3 + 7x^2 + 4$?

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coefficients

$x = -2$

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a.)	2	-5	7	4	104	
b.)	2	-5	7	0	4	104
c.)	2	-9	25	-50	104	
d.)	-4	18	25	-50	100	104
e.)	32	40	28	4	104	

(3 points) Question 3: The binary representation of 10 is 1010.
In computing 3^{10} by the left-to-right binary exponentiation algorithm (that follows from Horner's Rule), which of the following sequences of partial products emerges?

a.)	3	9	27	59,049
b.)	3	9	81	59,049
c.)	3	9	243	59,049
d.)	3	27	81	59,049
e.)	3	27	243	59,049

(3 points) Question 4: The binary representation of 10 is 1010.
In computing 3^{10} by the right-to-left binary exponentiation algorithm, which of the following sequences of partial products emerges?

a.)	59,049	9	3	1
b.)	59,049	9	9	1
c.)	59,049	9	9	3
d.)	59,049	27	9	1
e.)	59,049	27	9	3

(1 point) Bonus Question: We said in class that multiplication is more "expensive" than addition. What is at the core of that difference?

a.) Squaring a number makes it bigger than doubling it does.
b.) To multiply numbers we must also do addition, but addition does not involve multiplying.
c.) Multiplication usually involves more and bigger carries than addition.
d.) Multiplying by the base of a number system involves shifting digits and tacking a zero on the end.
e.) Finding the binary representation of an integer k is logarithmic, i.e. $O(\log k)$.
f.) Multiplying a pair of n-digit numbers calls for $O(n^2)$ operations but just $O(n)$ when adding them.