Expression Evaluator Test Cases

Test #	Description	Test Data	Expected	Actual	Pass/Fail
TC 01	Addition	3+4	7	7	Pass
TC 02	Subtraction With Parenthesis	8-(5-2)	5	5	Pass
TC 03	Multiply and Divide	10*2/5	4	4	Pass
TC 04	Exponentiation	2**3	8	8	Pass
TC 05	Mixed Operators	4*(3+2)%7-1	5	5	Pass
TC 06	Complex Addition with Extraneous Parentheses	(((2 + 3))) + (((1 + 2)))	8	8	Pass
TC 07	Mixed Operators with Extraneous Parentheses	((5 * 2) - ((3 / 1) + ((4 % 3)))	6	6	Pass
TC 08	Nested Parentheses with Exponents	(((2 ** (1 + 1)) + ((3 - 1) ** 2)) / ((4 / 2) % 3))	4	4	Pass
TC 09	Combination of Extraneous and Necessary Parentheses	(((((5 - 3))) * (((2 + 1))) + ((2 *3))))	12	12	Pass
TC 10	Extraneous Parentheses with Division	((9 + 6)) / ((3 * 1) / (((2 + 2))) - 1)	-60	-60	Pass
TC 11	Combining Unary Operators with Arithmetic Operations	+(-2) * (-3) – ((-4) / (+5))	6.8	6.8	Pass
TC 12	Unary Negation and Addition in Parentheses	-(+1) + (+2)	1	1	Pass
TC 13	Negation and Addition with Negated Parentheses	-(-(-3)) + (-4) + (+5)	-2	-2	Pass
TC 14	Unary Negation and Exponentiation	+2 ** (-3)	0.125	0.125	Pass

TC 15	Combining Unary Operators with Parentheses	-(+2) * (+3) - (-4) / (-5)	-6.8	-6.8	Pass
TC 16	Unmatched Parentheses	2 * (4 + 3 - 1	Invalid	Invalid	Pass
TC 17	Operators Without Operands	* 5 + 2	Invalid	Invalid	Pass
TC 18	Incorrect Operator Usage	4/0	Invalid	Invalid	Pass
TC 19	Missing Operator	5(2+3)	Invalid	Invalid	Pass
TC 20	Invalid Characters	7&3	Invalid	Invalid	Pass
TC 21	Mismatched Parentheses	(((3+4)-2)+(1)	Invalid	Invalid	Pass
TC 22	Invalid Operator Usage	((5+2/(3*0))	Invalid	Invalid	Pass
TC 23	Invalid Operator Sequence	((2-)1+3)	Invalid	Invalid	Pass
TC 24	Missing Operand	((4*2)+(-))	Invalid	Invalid	Pass
TC 25	Invalid Characters	((7*3)^2)	Invalid	Invalid	Pass
TC 26	Complex Nested Parentheses with Mixed Operators	(((10 + 5) * 2) - ((4 / 2) ** 3))	22	22	Pass
TC 27	Floating-Point Multiplication	2.5 * 4.2	10.5	10.5	Pass
TC 28	Large Numbers with Addition and Subtraction	1000000 + 500000 - 200000	1300000	1300000	Pass
TC 29	Decimal Division	22.5 / 4.5	5	5	Pass
TC 30	Negative Numbers in Multiplication	-5 * -10	50	50	Pass
TC 31	Simple Addition with Three Operands	1 + 2 + 3	6	6	Pass
TC 32	Nested Exponentiation	(2**3)**2	64	64	Pass

TC 33	Modulus Operator with Large Numbers	100000 % 300	100	100	Pass
TC 34	Division Resulting in Zero	0 / 5	0	0	Pass
TC 35	Complex Parentheses Arrangement	(((6 + 3) * 2) / (4 - 2))	9	9	Pass
TC 36	Large Negative Subtraction	-1000 - 500	-1500	-1500	Pass
TC 37	Combining Parentheses and Modulus	(8 + 2) % (3 * 2)	4	4	Pass
TC 38	Simple Exponentiation with Large Base	10**3	1000	1000	Pass
TC 39	Multiple Mixed Operators with Division	(4 * 2) + (6 / 3)	10	10	Pass
TC 40	Adding Zero	5 + 0	5	5	Pass
TC 41	Invalid Floating-Point Format	5..6 + 4	Invalid	Invalid	Pass
TC 42	Missing Operand in Mixed Operators	5 + - / 3	Invalid	Invalid	Pass
TC 43	Invalid Modulus Usage	5 % 0	Invalid	Invalid	Pass
TC 44	Multiple Operators Without Operand	5 ** ** 2	Invalid	Invalid	Pass
TC 45	Invalid Characters Mixed with Valid Operators	5 + 3 @ 4	Invalid	Invalid	Pass
TC 46	Empty Parentheses	5 + () - 3	Invalid	Invalid	Pass
TC 47	Extra Closing Parentheses	5 + 3 * 2))	Invalid	Invalid	Pass
TC 48	Invalid Use of Parentheses with	5 + (3 %)	Invalid	Invalid	Pass

	Modulus				
TC 49	Parentheses with Nested Invalid Characters	((3+4)-x)	Invalid	Invalid	Pass
TC 50	Modulus with Large Negative Numbers	-100000 % 300	200	200	Pass
TC 51	Modulus with Decimals	10.5 % 3.2	0.9	.9	Pass
TC 52	Subtraction and Multiplication Without Parentheses	5 - 3 * 2	-1	-1	Pass
TC 53	Mixing Decimals, Exponents, and Modulus	3.5 ** 2 % 2	0.25	.25	Pass
TC 54	Alternating Unary Operators with Exponentiation	(-2) ** 3	-8	-8	Pass
TC 55	Exponentiation with Large Negative Exponent	2**-10	0.000097 65	0.000097 65	Pass
TC 56	Division with Negative Divisor	10 / -2	-5	-5	Pass
TC 57	Exponentiation Resulting in One	10**0	1	1	Pass
TC 58	Decimal Multiplication Resulting in Zero	0.0 * 1.0	0	0	Pass
TC 59	Unbalanced Parentheses with Unary Negation	-(-3 + 2	Invalid	Invalid	Pass
TC 60	Modulus with Negative Dividend and Positive Divisor	-17 % 4	3	3	Pass