#8 $f(x) = a_n x^n + a_{n-1} x^{n-1} + \dots a_1 x + a_0$

$f(x) = a_n x^n + a_{n-1} x^{n-1} + \dots a_1 x + a_0$

$g(x) = b_n x^n + b_{n-1} x^{n-1} + \dots b_1 x + b_0$

① $f(x) + g(x) = \sum_{i=0}^{n} a_i x^i + \sum_{i=0}^{n} b_i x^i = \sum_{i=0}^{n} (a_i + b_i) x^i$ True additive ~~associativity~~ commutativity

② $(f(x) + g(x)) + z(x) = f(x) + (g(x) + z(x))$ True additive associativity

③ $f(x) + 0 = f(x)$ True additive identity

④ $f(x) - f(x) = 0$ True additive inverse

⑤ $\alpha(f(x) + g(x)) = \alpha f(x) + \alpha g(x)$ True scalar distributivity

⑥ $(\alpha + \beta) f(x) = \alpha f(x) + \beta f(x)$ True vector distributivity

⑦ $(\alpha \beta) f(x) = \alpha(\beta f(x))$ True multiplication associativity

⑧ $1 \cdot f(x) = f(x)$ True miltiplication identity