Addition of Polynomials

If the polynomials are functions we write: $(f + g)(x) = f(x) + g(x)$

To add polynomials

1) Use the commutative property to rearrange, get like terms together (the sign stays with the term that follows, if no sign + is understood).
2) Combine like terms.
3) You want your final answer to be in Standard Form, that is the highest degree term first, with lowest degree term last. Keep in mind the constant term has degree 0.

Examples:

$(3x – 8) + (4x^2 – 3x + 3)$

$3x – 8 + 4x^2 – 3x + 3$ Commute

$4x^2 + 3x – 3x – 8 + 3$ Combine

$4x^2 + 0x – 5$ Simplify

$4x^2 – 5$

Sometimes everything is lined up nicely:

$– 6m^3 + 2m^2 + 5m$

$8m^3 + 4m^2 – 6m$

$\underline{– 3m^3 + 2m^2 – 7m}$ In this case we combine like terms.

$– m^3 + 8m^2 – 8m$

This method is helpful when terms are missing or it starts to get confusing…

$- 7r^8 + 2r^6 – r^5 + (3r^6 + 5)$, we can line it up as above making sure terms with same exponents line up!

$– 7r^8 + 2r^6 – r^5$

$\underline{\qquad 3r^6 \quad + 5}$ Now it is easy to see which terms go together!

$– 7r^8 + 5r^6 – r^5 + 5$