

MAT 104 Quiz 12
Wednesday, October 3, 2004

1. Multiply $(2x^3y)(4x^3y^4)$

To multiply monomials, multiply the coefficients and *add* the exponents.
So

$$(2x^3y)(4x^3y^4) = 8x^7y^5$$

2. Multiply $(x + y)(x^2 - xy + y^2)$

Here we distribute each term in $(x + y)$ to every term in $(x^2 - xy + y^2)$,
and then combine like terms.

$$\begin{aligned}(x + y)(x^2 - xy + y^2) &= x(x^2) - x(xy) + x(y^2) + y(x^2) - y(xy) + y(y^2) \\ &= x^3 - x^2y + xy^2 + x^2y - xy^2 + y^3 \\ &= x^3 + y^3\end{aligned}$$

3. Multiply $(x + 3)(x^2 - x - 1)$

$$\begin{aligned}(x + 3)(x^2 - x - 1) &= x(x^2) - x(x) - x(1) + 3(x^2) - 3(x) - 3(1) \\ &= x^3 - x^2 - x + 3x^2 - 3x - 3 \\ &= x^3 + 2x^2 - 4x - 3\end{aligned}$$