M9 - 5.3 - Multiplying/Dividing Polynomials Notes

Multiplying

$a \times a = a^2$ $\quad 2a \times 3a = 6a^2$ $\quad -3x^2y \times 5x^3 = -15x^5y$

Multiply Coefficients
Add Exponents

$2x \times 3x^2 = 6x^3$ $\quad abcd \times efg = abcdefg$

Dividing

$20x^3 \div -5x^2 = -4x$ $\quad 30a^4 \div 6a^2 = 5a^2$ $\quad \frac{12x^2}{6x} = 2x$

Divide Coefficients
Subtract Exponents

$\frac{6x}{2} = 3x$ $\quad \frac{8x}{2x} = 4$ $\quad \boxed{\frac{x}{x} = 1}$ $\quad \frac{4x}{2x^2} = \frac{2}{x}$

$\frac{8x+4}{2} =$
$\frac{8x}{2} + \frac{4}{2}$
Separate into two fractions
Divide
$4x + 2$

$\boxed{\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}}$

$\frac{1}{2}(8x+4) =$
$\frac{8x+4}{2}$
Distribute
…

$\frac{9x^2+6x}{3x} =$
$\frac{9x^2}{3x} + \frac{6x}{3x}$
$3x + 2$

$-\frac{2x+4}{2} =$
$-\left(\frac{2x+4}{2}\right)$
Separate into two fractions
$-\left(\frac{2x}{2} + \frac{4}{2}\right)$
Divide
$-(x+2)$
$-x-2$
Distribute

$\frac{x^3}{x^2} = \frac{x \times x \times x}{x \times x} = x$
$\frac{x^2}{x} = \frac{x \times x}{x} = x$
$\frac{x^3}{x} = \frac{x \times x \times x}{x} = x^2$
$\frac{x}{x} = 1$
$\frac{x}{x^2} = \frac{1}{x \times x} = \frac{1}{x}$

$\frac{x^3}{x^2} = x$
$\frac{x^2}{x} = x$
$\frac{x^3}{x} = x^2$
$\frac{x}{x} = 1$
$\frac{x}{x^2} = \frac{1}{x}$