

## EXPONENTS - Extra Special

$$A = \frac{3^{17}}{3^{20}} = 3^{-3} = \frac{1}{27}$$

$$B = \frac{5^3 \times 2^{-3}}{2^5 \times 5^4} = \frac{1}{5 \times 2^8} = \frac{1}{1280}$$

$$C = \frac{27^3 x^{-5} y^2}{9^4 x^{-2} y^{-3}} = \frac{(3^3)^3 y^2 y^3}{(3^2)^4 x^5 x^{-2}} = \frac{3^9 y^5}{3^8 x^3} = \frac{3y^5}{x^3}$$

$$D = (3x^2 y^{-3})^{-4} = 3^{-4} x^{-8} y^{12} = \frac{y^{12}}{81x^8}$$

$$E = \left( \frac{2x^3 y^2}{3x^8 y^{-4}} \right)^{-5} = \frac{2^{-5} x^{-15} y^{-10}}{3^{-5} x^{-40} y^{20}} = \frac{3^5 x^{40} x^{-15}}{2^5 y^{20} y^{10}} = \frac{243 x^{25}}{32 y^{30}}$$

$$F = \left( \frac{2}{3} x^2 y^{-4} \right)^{-3} \times \left( \frac{2}{3} x^{-3} y^5 \right)^2 = \left( \frac{2}{3} \right)^{-3} x^{-6} y^{12} \times \left( \frac{2}{3} \right)^2 x^{-6} y^{10} = \frac{3}{2} x^{-12} y^{22} = \frac{3y^{22}}{2x^{12}}$$

$$G = (5x - 3)^2 = (5x)^2 - 2(5x)(+3) + 3^2 = 25x^2 - 30x + 9$$

$$H = \frac{2^6 - 2^5}{2^4 - 2^3} = \frac{64 - 32}{16 - 8} = \frac{32}{8} = 4 \quad \text{or} \quad \frac{2^5(2-1)}{2^3(2-1)} = 2^2 = 4$$

$$I = \frac{5x^2 y^{-1} \times (2xy^3)^4}{10x^3 y^{-5}} = \frac{5x^2 y^{-1} \times 2^4 x^4 y^{12}}{2 \times 5 x^3 y^{-5}} = \frac{2^3 x^6 y^{11}}{x^3 y^{-5}} = 8x^3 y^{16}$$

$$J = 128^{1/7} \times (3x^{2/3} y^{1/2})^6 \times \left( \frac{2}{3} \right)^5 x^2 y^{-3} = (2^7)^{1/7} \times 3^6 x^4 y^3 \times \frac{2^5}{3^5} x^2 y^{-3} \\ = \frac{2 \times 3^6 \times 2^5}{3^5} x^6 y^0 = 192x^6$$

$$K = \frac{(0.3 x^2 y^3)^5}{(3xy^{-2})^{-4}} = \frac{\left( \frac{3}{10} \right)^5 x^{10} y^{15}}{3^{-4} x^{-4} y^8} = \frac{3^5 \cdot 3^4}{10^5} x^{14} y^7 = \frac{3^9}{10^5} x^{14} y^7$$

EXPERIMENT 2

$$1 = \frac{1}{1 + \frac{1}{s}} = \frac{s}{s+1}$$

$$\frac{1}{s} = \frac{1}{s} \cdot \frac{s+1}{s+1} = \frac{s+1}{s(s+1)}$$

$$\frac{1}{s} = \frac{A}{s} + \frac{B}{s+1} \Rightarrow 1 = A(s+1) + Bs$$

$$1 = A + As + Bs = (A+B)s + A$$

$$A+B=0, A=1 \Rightarrow B=-1$$

$$\frac{1}{s} = \frac{1}{s} - \frac{1}{s+1}$$

$$1 = (s+1) - s = 1$$

$$1 = \frac{1}{s} - \frac{1}{s+1}$$

$$\frac{1}{s} = \frac{1}{s} - \frac{1}{s+1}$$

$$\frac{1}{s} = \frac{1}{s} - \frac{1}{s+1}$$

$$\frac{1}{s} = \frac{1}{s} - \frac{1}{s+1}$$