

27/11/2019

$$1. \frac{(3x^{n+1})^2 (3x^{2n})^{n+3}}{(x^n)^{2n}} =$$

$$= \frac{3^2 \times x^{2n+2} \cdot 3^{n+3} \times x^{2n^2+6n}}{x^{2n^2}} =$$

$$= \frac{3^{n+5} \times x^{2n^2+8n+2}}{x^{2n^2}} = 3^{n+5} \times x^{8n+2}$$

$$3) (x^{3n} + 2y^{n+1})(3x^n - 4y^{n+2}) + 4x^{3n}y^{n+2} =$$

$$= 3x^{4n} - \cancel{4x^{3n}y^{n+2}} + 6x^ny^{n+1} - 8y^{2n+3} + \cancel{4x^{3n}y^{n+2}} =$$

$$= 3x^{4n} + 6x^ny^{n+1} - 8y^{2n+3}$$

$$6. \frac{(a^{m+3})^{m+n}}{(a^{2m+1})^{m+n}} \cdot a^{n(m-2)} \cdot (a^m)^{m-2} = [\text{con } m \geq 2]$$

$$= \frac{a^{(m+3)(m+n)}}{a^{(2m+1)(m+n)}} \cdot a^{nm-2n} \cdot a^{m^2-2m} =$$

$$= \frac{a^{m^2 + nm + 3m + 3n}}{a^{2m^2 + 2nm + m + n}} \cdot a^{nm - 2n + m^2 - 2m} =$$

$$= a^{\cancel{m^2} + \cancel{nm} + \cancel{3m} + \cancel{3n} - \cancel{2m^2} - \cancel{2nm} - \cancel{m} - \cancel{n} + \cancel{nm} - \cancel{2n} + \cancel{m^2} - \cancel{2m}} =$$

$$= a^0 = 1$$

$$594 \quad [(16a^5)^2 : (8a^3)^3 + 1]^2 + \left(\frac{1}{2}a - 1\right)^2 + \left(\frac{1}{2}a - 1\right)\left(\frac{1}{2}a + 2\right) - \frac{3}{4}a^2 =$$

$$= \left[ (2^4 a^5)^2 : (2^3 a^3)^3 + 1 \right]^2 + \left( \frac{1}{2}a - 1 \right) \left( \frac{1}{2}a - 1 \right) + \frac{1}{4}a^2 + a -$$

$$- \frac{1}{2}a - 2 - \frac{3}{4}a^2 =$$

$$= \left[ 2^8 a^{10} : (2^9 a^9) + 1 \right]^2 + \frac{1}{4}a^2 - \frac{1}{2}a - \frac{1}{2}a + 1 + \frac{1}{4}a^2 + a -$$

$$- \frac{1}{2}a - 2 - \frac{3}{4}a^2 =$$

$$= \left[ 2^{-1}a + 1 \right]^2 + \left( \frac{1}{4} + \frac{1}{4} - \frac{3}{4} \right) a^2 - \frac{1}{2}a - 1 =$$

$$= \left[ \frac{1}{2}a + 1 \right] \cdot \left[ \frac{1}{2}a + 1 \right] - \frac{1}{4}a^2 - \frac{1}{2}a - 1 =$$

$$= \frac{1}{4}a^2 + \frac{1}{2}a + \frac{1}{2}a + 1 - \frac{1}{4}a^2 - \frac{1}{2}a - 1 = \frac{1}{2}a$$

$$188 \quad [(-2xy)^4 : (8x^4y) + (-x^4)^3 : (x^3)^3](x^2 + y^2) + y^2(x^3 - 2y^3) =$$

$$= [2^4 x^4 y^4 : (2^3 x^4 y) - X^{12} : X^9](x^2 + y^2) + x^3 y^2 - 2y^5 =$$

$$= [2y^3 - X^3](x^2 + y^2) + x^3 y^2 - 2y^5 =$$

$$= 2x^2 y^3 + \cancel{2y^5} - x^5 - \cancel{x^3 y^2} + \cancel{x^3 y^2} - \cancel{2y^5} = \boxed{2x^2 y^3 - x^5}$$


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$$\left[ \left( \frac{9}{125} x^2 y^5 \right)^2 \right]^3 : \left[ \frac{27}{5} x^{10} y^7 \right]^8 =$$

$$= \left[ \left( \frac{3^2}{5^3} x^2 y^5 \right)^2 \right]^3 : \left[ \frac{3^3}{5} x^{10} y^7 \right]^8 =$$

$$= \left[ \frac{3^4}{5^6} x^4 y^{10} \right]^3 : \left[ \frac{3^{24}}{5^8} x^{80} y^{56} \right] =$$

$$= \left[ \frac{3^{12}}{5^{18}} x^{12} y^{30} \right] : \left[ \frac{3^{24}}{5^8} x^{80} y^{56} \right] =$$

$$= \frac{\cancel{3^{12}}}{5^{\cancel{18}_{10}}} \cdot \frac{\cancel{5^8}}{\cancel{3^{24}_{12}}} x^{12-80} y^{30-56} = \frac{1}{5^{10} \cdot 3^{12}} x^{-68} y^{-26} = \frac{1}{5^{10} \cdot 3^{12} x^{68} y^{26}}$$