9/12/2019

442 $x\left(\frac{1}{4}x^2-\frac{13}{4}x+2\right)-4\left(\frac{x}{2}+1\right)^2\left(\frac{x}{2}-1\right)^2+\left(\frac{x^2}{4}-\frac{x}{2}+2\right)^2-\frac{13}{16}x^4=$

$$=\frac{1}{4}x^3-\frac{13}{4}x^2+2x-4\left[\left(\frac{x}{2}+1\right)\left(\frac{x}{2}-1\right)\right]^2+\frac{x^4}{16}+\frac{x^2}{4}+4-$$

$$-\frac{x^3}{4}+x^2-2x-\frac{13}{16}x^4=$$

$$=-\frac{13}{4}x^2-4\left[\frac{x^2}{4}-1\right]^2+\frac{x^4}{16}+\frac{x^2}{4}+4+x^2-\frac{13}{16}x^4=$$

$$=-\frac{13}{4}x^2-4\left[\frac{x^4}{16}+1-\frac{x^2}{2}\right]+\frac{x^4}{16}+\frac{x^2}{4}+4+x^2-\frac{13}{16}x^4=$$

$$=-\frac{13}{4}x^2-\frac{x^4}{4}-4+2x^2+\frac{x^4}{16}+\frac{x^2}{4}+4+x^2-\frac{13}{16}x^4=$$

$$=\left(-\frac{1}{4}+\frac{1}{16}-\frac{13}{16}\right)x^4+\left(-\frac{13}{4}+2+\frac{1}{4}+1\right)x^2=$$

$$=\frac{-4+1-13}{16}x^4+\frac{-13+8+1+4}{4}x^2=-\frac{16}{16}x^4=\boxed{-x^4}$$

380 $(p-2q-r)(2q+r-p) =$

$= (p-2q-r)\left[-(p-2q-r)\right] =$

$= -(p-2q-r)^2 = -(p^2+4q^2+r^2-4pq-2pr+4qr) =$

$= -p^2-4q^2-r^2+4pq+2pr-4qr$

425 $[(a-1)^2(a+1)^2+2a^2]^3(a^4-1)^3-a^8(a^{16}-3a^8+3) =$ $[-1]$

$= \left[(a^2-1)^2+2a^2\right]^3(a^4-1)^3-a^{24}+3a^{16}-3a^8 =$

$= \left[a^4+1-2a^2+2a^2\right]^3(a^4-1)^3-a^{24}+3a^{16}-3a^8 =$

$= \left[a^8-1\right]^3-a^{24}+3a^{16}-3a^8 =$

$= a^{24}-3a^{16}+3a^8-1-a^{24}+3a^{16}-3a^8 = -1$

$(A-B)^3 = A^3-3A^2B+3AB^2-B^3$

$A \to a^8$, $B \to 1$

$$(x^2 - y + 1)(x^2 + y - 1) =$$

$$= \underbrace{\left(x^2 - \underbrace{(y-1)}_{B}\right)}_{A}\underbrace{\left(x^2 + \underbrace{(y-1)}_{B}\right)}_{A} = \underbrace{(x^2)^2}_{A^2} - (y-1)^2 = x^4 - (y-1)^2 =$$

$$= x^4 - (y^2 - 2y + 1) = x^4 - y^2 + 2y - 1$$