More Difference of Perfect Squares – Answers

1. (a) $a^{100}-4=(a^{50}-2)(a^{50}+2)$ (b) $5^{2n}-49=(5^n-7)(5^n+7)$

(c) $(x^{15}-3)(x^{15}+3)$ (d) $(10c-2^n)(10c+2^n)$

(e) $8(x^2-4)=8(x-2)(x+2)$ (f) $(5a-7y)(5a+7y)$

(g) $3(t^2-9)=3(t-3)(t+3)$ (h) $x^2(x^2-25)=x^2(x-5)(x+5)$

(i) $(c-b)(c+b)$ (j) $3(49z^2-25)=3(7z-5)(7z+5)$

(k) $(t^2-k^2)(t^2+k^2)=(t-k)(t+k)(t^2+k^2)$ (l) $(1-k^n)(1+k^n)$

(m) $(x^n-3)(x^n+3)$ (n) $(k-a^n)(k+a^n)$

(o) $(t^3-w^2h)(t^3+w^2h)$ (p) $(x^{2n}-y^{2n})(x^{2n}+y^{2n})=(x^n-y^n)(x^n+y^n)(x^{2n}+y^{2n})$

2. (a) $(x-y)(x+y)+1(x-y)=(x-y)(x+y+1)$

(b) $(x-y)(x+y)-(x+y)=(x+y)(x-y-1)$

(c) $4a^2-b^2-2a+b=(2a-b)(2a+b)-(2a-b)=(2a-b)(2a+b-1)$

(d) $a^2-4b^2+a+2b=(a-2b)(a+2b)+1(a+2b)=(a+2b)(a-2b+1)$

3. (a) $4a(x^{2n}-9)=4a(x^n-3)(x^n+3)$

(b) $(r^2-4)(r^2+4)=(r-2)(r+2)(r^2+4)$

4. (a) $[(4n+1)-(n+4)][(4n+1)+(n+4)]$, $n\in\mathbb{Z}$

$=(4n+1-n-4)(4n+1+n+4)=3(n-1)(5)(n+1)=15(n-1)(n+1)$

$=15k$, $k\in\mathbb{Z}$

(b) $[(4.5n+8)-(2.5n+6)][(4.5n+8)+(2.5n+6)]$

$=(4.5n+8-2.5n-6)(4.5n+8+2.5n+6)$

$=2(n+1)(7)(n+2)=14(n+1)(n+2)$