1. $(2a-b)^2-(3a+b)(a-2b)+5a^2-ab$

$=4a^2-4ab+b^2-(3a^2-6ab+ab-2b^2)+5a^2-ab=$

$=4a^2-4ab+b^2-3a^2+6ab-ab+2b^2+5a^2-ab=\ 6a^2+3b^2$

2. $(x+y)^2-2y(x-y)-(x+y)(y-x)$

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

$=x^2+2xy+y^2-2xy+2y^2-y^2+x^2=\ 2x^2+2y^2$

3. $(a^2+b^2)(a^2-b^2)-(a^2+b^2)^2+2a^2(a^2+b^2)$

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

$=a^4-b^4-a^4-2a^2b^2-b^4+2a^4+2a^2b^2=\ 2a^4-2b^4$

4. $2(y-3x)^2+2(2x+y)(y-2x)-9x^2-2xy-(2y-x)^2$

$=2(y^2-6xy+9x^2)+2(y^2-4x^2)-9x^2-2xy-(4y^2-4xy+x^2)=$

$=2y^2-12xy+18x^2+2y^2-8x^2-9x^2-2xy-4y^2+4xy-x^2=\ -10xy$

5. $(x+2)^2-3(x+2)(x-2)+(x-2)^3-x^2(x-8)$

$=x^2+4x+4-3(x^2-4)+x^3-6x^2+12x-8-x^3+8x^2=$

$=x^2+4x+4-3x^2+12+x^3-6x^2+12x-8-x^3+8x^2=\ 16x+8$

6. $x+1+(2x+y+3)^2-(2x+y)^2-2(3y+5)$

$=x+1+4x^2+y^2+9+4xy+12x+6y-(4x^2+4xy+y^2)-6y-10=$

$=x+1+4x^2+y^2+9+4xy+12x+6y-4x^2-4xy-y^2-6y-10=\ 13x$

7. $(a^2+4b^2)(2b+a)(a-2b)(16b^4+a^4)$

$=(a^2+4b^2)(a^2-4b^2)(16b^4+a^4)=(a^4-16b^4)(16b^4+a^4)=\ a^8-256b^8$

8. $\{[x^3-y^3+(x+y)^3+2x^2y-x(2x+3y)(x+y)]^2-2\}^3$

$=\{[x^3-y^3+x^3+3x^2y+3xy^2+y^3+2x^2y-x(2x^2+2xy+3xy+3y^2]^2-2\}^3=$

$=\{[2x^3+5x^2y+3xy^2-2x^3-2x^2y-3x^2y-3xy^2]^2-2\}^3=\{[0]^2-2\}^3=(-2)^3=\ -8$

9. $[a+3+(b-1)(2b+a+3)+b(b+2a-1)]a-(b+a)^3$

$=[a+3+2b^2+ab+3b-2b-a-3+b^2+2ab-b]a-(a^3+3a^2b+3ab^2+b^3)=$

$=(3b^2+3ab)a-a^3-3a^2b-3ab^2-b^3=$

$=3ab^2+3a^2b-a^3-3a^2b-3ab^2-b^3=\boxed{-a^3-b^3}$

10. $\left[(x+3a)^2+(2x-3a)^2+4\left(x-\frac{3}{2}a\right)(3a+x)\right]:(-3)^2-(x-2)^2$

$=\left[x^2+6ax+9a^2+4x^2-12ax+9a^2+4\left(3ax+x^2-\frac{9}{2}a^2-\frac{3}{2}ax\right)\right]:9-(x^2-4x+4)=$

$=(x^2+6ax+9a^2+4x^2-12ax+9a^2+12ax+4x^2-18a^2-6ax):9-x^2+4x-4=$

$=(9x^2):9-x^2+4x-4=x^2-x^2+4x-4=\boxed{4x-4}$