

Simplify.

1.) $(5x^2 - 12x + 1) - (2x^2 + 3x - 7)$

$$\blacksquare 5x^2 - 12x + 1 - 2x^2 - 3x + 7$$

$$\blacksquare \boxed{3x^2 - 15x + 8}$$

2.) $(-2x^2y)(5xy^7)$

$$\blacksquare \boxed{-10x^3y^8}$$

3.) $(4x - 3)(2x + 5)$

$$\blacksquare 8x^2 + 20x - 6x - 15$$

$$\blacksquare \boxed{8x^2 + 14x - 15}$$

4.) $(3x - 2)(2x^2 - 5x + 7)$

$$\blacksquare 6x^3 - 15x^2 + 21x - 4x^2 + 10x - 14$$

$$\blacksquare \boxed{6x^3 - 19x^2 + 31x - 14}$$

5.) $(5x^3 + 3x^2 + 5) - (7x^3 - 9x^2 + 8x - 5)$

$$\blacksquare 5x^3 + 3x^2 + 5 - 7x^3 + 9x^2 - 8x + 5$$

$$\blacksquare \boxed{-2x^3 + 12x^2 - 8x + 10}$$

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

$$\blacksquare (3x + 5y)(3x + 5y)$$

$$\blacksquare 9x^2 + 15xy + 15xy + 25y^2$$

$$\blacksquare \boxed{9x^2 + 30xy + 25y^2}$$

7.) $(4m^3 + 5m + 2m^4) + (2m - 2m^4) - (8m^3 - 6m^4)$

$$\blacksquare \underline{4m^3} + 5m + \underline{2m^4} + 2m - \underline{2m^4} - \underline{8m^3} + \underline{6m^4}$$

$$\blacksquare \boxed{6m^4 - 4m^3 + 7m}$$

8.) $(4k^2 - 3)(4k^2 - k + 5)$

$$\blacksquare 16k^4 - 4k^3 + 20k^2 - 12k^2 + 3k - 15$$

$$\blacksquare \boxed{16k^4 - 4k^3 + 8k^2 + 3k - 15}$$

9.) $(2 - 8i) + 2i(3 + 5i)$

$\bullet 2 - 8i + 6i + 10i^2$

$\bullet 2 - 8i + 6i + 10(-1)$

$\bullet 2 - 8i + 6i - 10$

$\bullet \boxed{-8 - 2i}$

11.) $(7i)(3i)(2i)$

$\bullet (21i^2)(2i)$

$\bullet (21(-1))(2i)$

$\bullet (-21)(2i)$

$\bullet \boxed{-42i}$

13.) $(4 - 3i)(2 + 3i)$

$\bullet 8 + 12i - 6i - 9i^2$

$\bullet 8 + 12i - 6i - 9(-1)$

$\bullet 8 + 6i + 9$

$\bullet \boxed{17 + 6i}$

15.) $\frac{3i}{4+i} \cdot \frac{(4-i)}{(4-i)}$

$\bullet \frac{12i - 3i^2}{16 - 4i + 4i - i^2}$

$\bullet \frac{12i - 3(-1)}{16 - 4i + 4i - (-1)}$

$\bullet \boxed{\frac{3 + 12i}{17}}$

17.) $4i(2 - 5i) + 3i(6 - 10i)$

$\bullet 8i - 20i^2 + 18i - 30i^2$

$\bullet 8i - 20(-1) + 18i - 30(-1)$

$\bullet \boxed{50 + 26i}$

10.) $(5 - 2i)(3 + 4i)$

$\bullet 15 + 20i - 6i - 8i^2$

$\bullet 15 + 20i - 6i - 8(-1)$

$\bullet 15 + 20i - 6i + 8$

$\bullet \boxed{23 + 14i}$

12.) $(-6 + 8i) - (-3 - 8i) + 2i(2 - 2i)$

$\bullet -6 + 8i + 3 + 8i + 4i - 4i^2$

$\bullet -6 + 8i + 3 + 8i + 4i - 4(-1)$

$\bullet -6 + 8i + 3 + 8i + 4i + 4$

$\bullet \boxed{1 + 20i}$

14.) $(1 - 2i)^2$

$\bullet (1 - 2i)(1 - 2i)$

$\bullet 1 - 2i - 2i + 4i^2$

$\bullet 1 - 2i - 2i + 4(-1)$

$\bullet 1 - 2i - 2i - 4$

$\bullet \boxed{-3 - 4i}$

16.) $\frac{2-i}{3i} \cdot \frac{i}{i}$

$\bullet \frac{2i - i^2}{3i^2}$

$\bullet \frac{2i - (-1)}{3(-1)}$

$\bullet \boxed{\frac{1 + 2i}{-3}}$

18.) i^{43}

$\bullet i \cdot i^{42}$

$\bullet i \cdot (i^2)^{21}$

$\bullet i \cdot (-1)^{21}$

$\bullet i \cdot (-1)$

$\bullet \boxed{-i}$