

Adding and Subtracting Polynomials

Simplify each expression.

1) $(5p^2 - 3) + (2p^2 - 3p^3)$

$$\begin{array}{r} 7p^2 - 3p^3 - 3 \\ -3p^3 + 7p^2 - 3 \end{array}$$

3) $(4 + 2n^3) + (5n^3 + 2)$

$$7n^3 + 6$$

5) $(3a^2 + 1) - (4 + 2a^2)$

$$\begin{array}{r} 3a^2 + 1 - 4 - 2a^2 \\ a^2 - 3 \end{array}$$

7) $(5a + 4) - (5a + 3)$

$$5a + 4 - 5a - 3$$

$$1$$

9) $(-4k^4 + 14 + 3k^2) + (-3k^4 - 14k^2 - 8)$

$$-7k^4 - 11k^2 + 6$$

11) $(12a^5 - 6a - 10a^3) - (10a - 2a^5 - 14a^4)$

$$12a^5 - 6a - 10a^3 - 10a + 2a^5 + 14a^4$$

$$14a^5 + 14a^4 - 10a^3 - 16a$$

13) $(-x^4 + 13x^5 + 6x^3) + (6x^3 + 5x^5 + 7x^4)$

$$18x^5 + 6x^4 + 12x^3$$

15) $(13n^2 + 11n - 2n^4) + (-13n^2 - 3n - 6n^4)$

$$-8n^4 + 8n$$

2) $(a^3 - 2a^2) - (3a^2 - 4a^3)$

$$\begin{array}{r} a^3 - 2a^2 - 3a^2 + 4a^3 \\ 5a^3 - 5a^2 \end{array}$$

4) $(4n - 3n^3) - (3n^3 + 4n)$

$$\begin{array}{r} 4n - 3n^3 - 3n^3 - 4n \\ -6n^3 \end{array}$$

6) $(4r^3 + 3r^4) - (r^4 - 5r^3)$

$$\begin{array}{r} 4r^3 + 3r^4 - r^4 + 5r^3 \\ 2r^4 + 9r^3 \end{array}$$

8) $(3x^4 - 3x) - (3x - 3x^4)$

$$3x^4 - 3x - 3x + 3x^4$$

$$6x^4 - 6x$$

10) $(3 - 6n^5 - 8n^4) - (-6n^4 - 3n - 8n^5)$

$$3 - 6n^5 - 8n^4 + 6n^4 + 3n + 8n^5$$

$$2n^5 - 2n^4 + 3n + 3$$

12) $(8n - 3n^4 + 10n^2) - (3n^2 + 11n^4 - 7)$

$$8n - 3n^4 + 10n^2 - 3n^2 - 11n^4 + 7$$

$$-14n^4 + 7n^2 + 8n + 7$$

14) $(9r^3 + 5r^2 + 11r) + (-2r^3 + 9r - 8r^2)$

$$9r^3 + 5r^2 + 11r - 2r^3 + 9r - 8r^2$$

$$7r^3 - 3r^2 + 20r$$

16) $(-7x^5 + 14 - 2x) + (10x^4 + 7x + 5x^5)$

$$-2x^5 + 10x^4 + 5x + 14$$

$$17) (7 - 13x^3 - 11x) - (2x^3 + 8 - 4x^5)$$

$$\underline{7} - \underline{13x^3} - \underline{11x} - \underline{2x^3} - \underline{8} + \underline{4x^5}$$

$$\boxed{4x^5 - 15x^3 - 11x - 1}$$

$$18) (13a^2 - 6a^5 - 2a) - (-10a^2 - 11a^5 + 9a)$$

$$\underline{13a^2} - \underline{6a^5} - \underline{2a} + \underline{10a^2} + \underline{11a^5} - \underline{9a}$$

$$\boxed{5a^5 + 23a^2 - 11a}$$

$$19) (3v^5 + 8v^3 - 10v^2) - (-12v^5 + 4v^3 + 14v^2)$$

$$\underline{3v^5} + \underline{8v^3} - \underline{10v^2} + \underline{12v^5} - \underline{4v^3} - \underline{14v^2}$$

$$\boxed{15v^5 + 4v^3 - 24v^2}$$

$$20) (8b^3 - 6 + 3b^4) - (b^4 - 7b^3 - 3)$$

$$\underline{8b^3} - \underline{6} + \underline{3b^4} - \underline{b^4} + \underline{7b^3} + \underline{3}$$

$$\boxed{2b^4 + 15b^3 - 3}$$

$$21) (\cancel{4k^5} - 3 - \underline{3k^3}) + (\underline{-8k^4} + \underline{6k^3} - \cancel{8k^5})$$

$$\boxed{-8k^5 - 4k^4 + 3k^3 - 3}$$

$$22) (\underline{-10k^2} + \underline{7k} + \underline{6k^4}) + (-14 - \underline{4k} - \underline{14k})$$

$$\boxed{2k^4 - 10k^2 - 7k - 14}$$

$$23) (-7n^2 + 8n - 4) - (-11n + 2 - 14n^2)$$

$$\underline{-7n^2} + \underline{8n} - \underline{4} + \underline{11n} - \underline{2} + \underline{14n^2}$$

$$\boxed{7n^2 + 19n - 6}$$

$$24) (14p^4 + 11p^2 - 9p^5) - (-14 + 5p^5 - 11p^2)$$

$$\underline{14p^4} + \underline{11p^2} - \underline{9p^5} + \underline{14} - \underline{5p^5} + \underline{11p^2}$$

$$\boxed{-14p^5 + 14p^4 + 22p^2 + 14}$$

$$25) (8k + k^2 - 6) - (-10k + 7 - 2k^2)$$

$$\underline{8k} + \underline{k^2} - \underline{6} + \underline{10k} - \underline{7} + \underline{2k^2}$$

$$\boxed{3k^2 + 18k - 13}$$

$$26) (\underline{-9v^2} - \underline{8u}) + (\underline{-2uv} - \underline{2u^2} + \underline{v^2}) + (\underline{v^2} + \underline{4uv})$$

$$\boxed{-9v^2 - 8u + 2uv - 2u^2}$$

$$27) (4x^2 + 7x^3y^2) - (-6x^2 - 7x^3y^2 - 4x) - (10x + 9x^2)$$

$$\underline{4x^2} + \underline{7x^3y^2} + \underline{6x^2} + \underline{7x^3y^2} + \underline{4x} - \underline{10x} - \underline{9x^2}$$

$$\boxed{x^2 + 14x^3y^2 - 6x}$$

$$28) (\underline{-5u^3v^4} + \underline{9u}) + (\underline{-5u^3v^4} - \underline{8u} + \underline{8u^2v^2}) + (\underline{-8u^4v^2} + \underline{8u^2v^4})$$

$$\boxed{-2u^3v^4 + u + 8u^2v^2 - 8u^4v^2}$$

$$29) (\underline{-9xy^3} - \underline{9x^4y^3}) + (\underline{3xy^2} + \underline{7y^4} - \underline{8x^4y^4}) + (\underline{3x^4y^3} + \underline{2xy^3})$$

$$\boxed{-4xy^3 - 6x^4y^3 + 7y^4 - 8x^4y^4}$$

$$30) (y^3 - 7x^4y^4) + (-10x^4y^3 + 6y^3 + 4x^4y^4) - (x^4y^3 + 6x^4y^4)$$

$$\underline{y^3} - \underline{7x^4y^4} - \underline{10x^4y^3} + \underline{6y^3} + \underline{4x^4y^4} - \underline{x^4y^3} - \underline{6x^4y^4}$$

$$\boxed{y^3 - 9x^4y^4 - 11x^4y^3 + 6y^3}$$

$$\boxed{7y^3 - 9x^4y^4 - 11x^4y^3}$$