Practice 7.3

Simplify each expression.

1) $(2m - 6m^3) + (7m + 7m^3)$

$$\boxed{1m^3 + 9m}$$

2) $(7x + 6x^4) + (7x^3 - 5x^4 - x)$

$$\boxed{x^4 + 7x^3 + 6x}$$

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

$$= -4k^4 - 5k^3 - 6k^2 + 6$$

4) $(5n^2 + 5n^3 + n) + (8n^3 + 3n + 6n^2)$

$$= -3n^3 + 11n^2 - 2n$$

Find each product.

5) $(4x + 1)(3x - 7)$

$$12x^2 - 28x + 3x - 7$$
$$\boxed{12x^2 - 25x - 7}$$

6) $(6 - 8n)^2 \qquad (6 - 8n)(6 - 8n)$

$$= 36 - 48n - 48n + 64n^2$$
$$\boxed{= 64n^2 - 96n + 36}$$

7) $(7u + 6v)(7u + 8v)$

$$= 49u^2 + 56uv + 42uv + 48v^2$$
$$= 49u^2 + 98uv + 48v^2$$

8) $(3m - 2n)(3m + 2n)$

$$= (3m)^2 - (2n)^2$$
$$= 9m^2 - 4n^2$$

9) $(6x^2 + 5x - 3)(6x - 8)$

$$36x^3 + 30x^2 - 18x - 48x^2 - 40x + 24$$
$$= 36x^3 - 18x^2 - 58x + 24$$

10) $(x + 6)^2 = (x + 6)(x + 6)$

$$\boxed{= x^2 + 12x + 36}$$

I like the binomial first!

12) $(6a^2 - 4ab + 7b^2)(3a - 7b)$

$(3a - 7b)(6a^2 - 4ab + 7b^2)$

$$18a^3 - 12a^2b + 21ab^2 - 42a^2b + 28ab^2 - 49b^3$$
$$= 18a^3 - 54a^2b + 49ab^2 - 49b^3$$

11) $(5v - 4)(5v + 4) = (5v)^2 - 4^2$

$$\boxed{= 25v^2 - 16}$$

13) $(2v - 4)^2 = (2v - 4)(2v - 4)$

$$= 4v^2 - 2(8v) + 16$$
$$\boxed{= 4v^2 - 16v + 16}$$

14) $(m + 3)(4m - 5)$

$$4m^2 + 12m - 5m - 15$$
$$\boxed{= 4m^2 + 7m - 15}$$

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15) $(-6x + 5y)^2 \quad (-6x + 5y)(-6x + 5y)$

$$= 36x^2 - 30xy - 30xy + 25y^2$$
$$\boxed{= 36x^2 - 60xy + 25y^2}$$

16) $(3r + 8)(3r^2 + 8r - 8)$

$$9r^3 + 24r^2 - 24r + 24r^2 + 64r - 64$$
$$\boxed{= 9r^3 + 48r^2 + 40r - 64}$$

17) $(3p - 7)^3 = (3p - 7)(3p - 7)(3p - 7)$

$$(3p - 7)(9p^2 - 42p + 49)$$
$$= 27p^3 - 126p^2 + 147p - 63p^2 + 294p - 343$$
$$\boxed{= 27p^3 - 189p^2 + 441p - 343}$$

18) $(7 + 4x)^3 = (7 + 4x)(7 + 4x)(7 + 4x)$

$$= 49 + 28x + 28x + 16x^2$$
$$= (7 + 4x)(16x^2 + 56x + 49)$$
$$= 108x^2 + 392x + 343$$
$$+ 64x^3 + 224x^2 + 196x$$
$$\boxed{= 64x^3 + 336x^2 + 588x + 343}$$