

Final Review ~ Polynomials **Developing**

Simplify each sum.

1)  $(4 + 3x) + (2 - 2x)$

$x + 6$

2)  $(3 + 4r) + (r - 4)$

$5r - 1$

3)  $(4x^2 - 3) + (2x^2 - 3)$

$6x^2 - 6$

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

$0$

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

$3k^2 + 5k + 6$

6)  $(3r + r^2) + (r^2 + 3)$

$2r^2 + 3r + 3$

7)  $(4 - 5m^2 - 4m) + (5m^2 + 4 - 2m)$

$-6m + 8$

8)  $(4p^2 - 1 - 4p) + (5p - 3 - 3p^2)$

$p^2 + p - 4$

Simplify each difference.

9)  $(4 + 3x) - (5 - 5x)$

$8x - 1$

10)  $(2 + x) - (3 - 2x)$

$3x - 1$

11)  $(5x^2 - 1) - (2 - 5x^2)$

$10x^2 - 3$

12)  $(5p^2 + 2) - (5 + 4p^2)$

$p^2 - 3$

13)  $(2x^2 + 2) - (5x^2 + 2)$

$-3x^2$

14)  $(5m - 2m^2) - (2m^2 + 2m)$

$-4m^2 + 3m$

15)  $(3r - 2r^2) - (4r + 5r^2) - (3r^2 + 5r)$

$-10r^2 - 6r$

16)  $(m + 5m^2) - (4 + 3m^2) - (1 - 3m)$

$2m^2 + 4m - 5$

Find each product.

17)  $5(3b - 3)$

$15b - 15$

18)  $2(k - 4)$

$2k - 8$

19)  $3(4n + 2)$

$12n + 6$

20)  $4(2r - 4)$

$8r - 16$

21)  $5x(5x + 4)$

$25x^2 + 20x$

22)  $4n(5n + 3)$

$20n^2 + 12n$

23)  $2(4r^2 - 3r - 4)$

$8r^2 - 6r - 8$

24)  $3(4r^2 + 4r + 3)$

$12r^2 + 12r + 9$

Divide.

25)  $\frac{50n^2 + 20n + 20}{10}$

$5n^2 + 2n + 2$

26)  $\frac{32v^2 - 40v + 24}{8}$

$4v^2 - 5v + 3$

27)  $\frac{27x^2 - 27x - 36}{9}$

$3x^2 - 3x - 4$

28)  $\frac{15x^2 + 40x + 10}{5}$

$3x^2 + 8x + 2$

29)  $\frac{12p^2 + 16p}{4p}$

$3p + 4$

30)  $\frac{50n^2 - 8n}{-2n}$

$-25n + 4$

31)  $\frac{36r - 12r^2}{6r}$

$6 - 2r$

32)  $\frac{-56t^2 + 24t}{8t}$

$-7t + 3$

## Final Review ~ Polynomials Proficient

Simplify each expression.

1)  $(m^4 - 4m^2) - (3m^2 - 3m^3)$

$m^4 + 3m^3 - 7m^2$

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

$7n^2$

3)  $(4 + 5n) - (5 + 5n)$

$-1$

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

$-3a^2$

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

$6x^2 + 2x$

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

$-3x^4 + x^2 + 8$

7)  $(4n^5 + 8n) + (-7n - 2n^5) - (5n^3 + 4n^5)$

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

8)  $(-6n^5 - 5n) + (-9 - 7n) + (n + 7n^3)$

$-6n^5 + 7n^3 - 11n - 9$

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

$13x^4 + 10x + 17$

10)  $(-6x^2 - 9x^3) + (-8x^2 + 6x^3) + (-9x^3 + 8x^2)$

$-12x^3 - 6x^2$

11)  $(7a^3 + 4a^4 - 4a) + (9a + 8a^2 - 9a^3)$

$4a^4 - 2a^3 + 8a^2 + 5a$

12)  $(-2n^3 - 2n^4 + 10n^5) + (-6n^5 - 5n^3 - 10n^4)$

$4n^5 - 12n^4 - 7n^3$

13)  $(-a^3 - 10a^2 - 10) + (5a^5 - 5 - 10a^3)$

$5a^5 - 11a^3 - 10a^2 - 15$

14)  $(-8r^3 - 9 + 10r) - (-r + 10 + 6r^3)$

$-14r^3 + 11r - 19$

15)  $(-k^4 - 10 - 6k^2) - (4k^2 - 6k - 2) + (2k^2 + 6k^4 - 4)$

$5k^4 - 8k^2 + 6k - 12$

16)  $(-6m^4 - 3m^3 - 1) + (-5m + 7m^2 + 9m^5) - (m^4 + 2 - 2m^2)$

$9m^5 - 7m^4 - 3m^3 + 9m^2 - 5m - 3$

Find each product.

$$17) 2n(-3n - 7) \\ -6n^2 - 14n$$

$$18) 5(-2n - 3) \\ -10n - 15$$

$$19) 6(-v - 8) \\ -6v - 48$$

$$20) 3p(7p + 6) \\ 21p^2 + 18p$$

$$21) 3x(-2x^2 - x - 3) \\ -6x^3 - 3x^2 - 9x$$

$$22) 6(3x^2 - 3x + 4) \\ 18x^2 - 18x + 24$$

$$23) 5a^3(5a - 4b) \\ 25a^4 - 20a^3b$$

$$24) 2(6x^2 + xy - 4y^2) \\ 12x^2 + 2xy - 8y^2$$

Divide.

$$25) (8v^3 + 16v^2 + 4v^4) \div 4v^2 \\ v^2 + 2v + 4$$

$$26) (18n^3 + 18n^2 + 18n) \div 6n \\ 3n^2 + 3n + 3$$

$$27) (16n^3 + 12n^2 + 4n) \div 4n \\ 4n^2 + 3n + 1$$

$$28) \frac{4n^3 + 4n^2 + 4n}{-2} \\ -2n^3 - 2n^2 - 2n$$

$$29) (24k^4 + 12k^3 + 24k^2) \div 6k^2 \\ 4k^2 + 2k + 4$$

$$30) \frac{32a^4 - 64a^3 - 24a^2}{8} \\ 4a^4 - 8a^3 - 3a^2$$

$$31) \frac{18n^3 - 12n^4 + 6n^6}{3n^3} \\ 6 - 4n + 2n^3$$

$$32) \frac{40p^3 - 60p + 15p^2}{-5p} \\ -8p^2 + 12 - 3p$$

Final Review ~ Polynomials *Extending*

Simplify each expression.

1)  $(4 - 14n^2 - 4n) + (13 + 13n^2 - n)$

$$-n^2 - 5n + 17$$

2)  $(-6n^4 + 13n^3 + 13n) - (10n^3 + 9n - 5)$

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

3)  $(-x^4y^2 - 13xy^4) + (13xy^4 + 3x^2y^3)$

$$-x^4y^2 + 3x^2y^3$$

4)  $(-11a^4b^2 + 3b^3) + (-5a^4b^2 + b^3)$

$$-16a^4b^2 + 4b^3$$

5)  $(-8y + 11x^3y^3) + (13x^3y^3 + 6y) - (3y + 3x)$

$$24x^3y^3 - 5y - 3x$$

6)  $(4u^2 + u^4v^2) + (7u^2 + 8u^4v^2) - (2u^2 + 3u^4v^2)$

$$6u^4v^2 + 9u^2$$

7)  $\left(2x^3 - \frac{17}{3}x\right) - \left(\frac{4}{5}x^3 - \frac{3}{5}x\right)$

$$\frac{6}{5}x^3 - \frac{76}{15}x$$

8)  $\left(-\frac{11}{3} - \frac{4}{3}v^4\right) - \left(-\frac{2}{3}v^4 - 1\right)$

$$-\frac{2}{3}v^4 - \frac{8}{3}$$

9)  $\left(-\frac{11}{3}v - \frac{3}{2}v^3\right) + \left(\frac{2}{5}v^3 + \frac{1}{2}v\right)$

$$-\frac{11}{10}v^3 - \frac{19}{6}v$$

10)  $\left(\frac{1}{5}x - \frac{7}{2}x^2\right) + \left(2x^2 - \frac{3}{2}x\right)$

$$-\frac{3}{2}x^2 - \frac{13}{10}x$$

11)  $(-9.8 + 2.6v) - (-2.6v^2 - 8.81v)$

$$2.6v^2 + 11.41v - 9.8$$

12)  $(2n - 3n^2) - (0.17n^2 - 5n)$

$$-3.17n^2 + 7n$$

13)  $(-9.7 - 3.09n^3) - (-3.5 - 9n^3)$

$$5.91n^3 - 6.2$$

14)  $(6.3k^5 - 8.497k) + (7.3 + 6.1k)$

$$6.3k^5 - 2.397k + 7.3$$

$$15) (-3u^3v^2 - 5u^4 + 3v - 6u^5v) + (6u^2v^4 + 2uv + 5u^3v^2 + 6v) - (10u^5v^4 - 7v - 6u^4 + 8u^5v)$$

$$-10u^5v^4 - 14u^5v + 6u^2v^4 + 2u^3v^2 + u^4 + 2uv + 16v$$

Find each product.

$$16) 6y(4x^2 - 2xy - 5y^2)$$

$$24yx^2 - 12y^2x - 30y^3$$

$$17) -8(-8x^2 + xy - 3y^2)$$

$$64x^2 - 8xy + 24y^2$$

$$18) -\frac{27}{7}\left(-\frac{48}{7}x + \frac{2}{5}\right)$$

$$\frac{1296}{49}x - \frac{54}{35}$$

$$19) \frac{5k^3}{2}\left(\frac{7}{2}k^2 - \frac{1}{2}k + \frac{20}{3}\right)$$

$$\frac{35}{4}k^5 - \frac{5}{4}k^4 + \frac{50}{3}k^3$$

$$20) -1.3x^5(6.9x - 2.1)$$

$$-8.97x^6 + 2.73x^5$$

$$21) 1.8(1.9p^2 + 5p - 2.3)$$

$$3.42p^2 + 9p - 4.14$$

Divide.

$$22) (4b^4 + 12b^3 + 8b^2) \div 4b^2$$

$$b^2 + 3b + 2$$

$$23) (8x^4 + 4x^3 + 16x^2) \div 4x$$

$$2x^3 + x^2 + 4x$$

$$24) \frac{24x^3 - 32x^2 + 2x}{8x}$$

$$3x^2 - 4x + \frac{1}{4}$$

$$25) \frac{3k^5 + 12k^3 - 12k^4}{-3k^3}$$

$$-k^2 - 4 + 4k$$

$$26) \frac{4x^4 + 2x^3 + 2x^2}{6x^2}$$

$$\frac{2x^2}{3} + \frac{x}{3} + \frac{1}{3}$$

$$27) \frac{-4m^5 + 4m^3 - 4m^2}{8m^2}$$

$$-\frac{m^3}{2} + \frac{m}{2} - \frac{1}{2}$$

$$28) (3k^4 + k^3 + 32k^2) \div 8k^3$$

$$\frac{3k}{8} + \frac{1}{8} + \frac{4}{k}$$

$$29) (24b^5 + b^4 + 3b^3) \div 6b^2$$

$$4b^3 + \frac{b^2}{6} + \frac{b}{2}$$