

Key

You must show all of your work if you want full credit!! Please place your answers on the line provided.

I. Multiple-Choice - You **MUST** show work for these problems in the work area box if you want **ANY** credit!!!

Find the degree of the polynomial.

10 1. $25a^3b^7$

work area:

$$25a^3b^7$$

$$3+7=10$$

12 2. $A^5b^2 + 13a^3b^3 - 6a^5b^7$

work area:

$$A^5b^2 + 13a^3b^3 - 6a^5b^7$$

$$5+2=7$$

$$3+3=6$$

$$5+7=12$$

Arrange the terms of the polynomial so that the powers of x are in descending order. highest to lowest

___ 3. $4xy^4 - 3xy^5 - 6y^3 + 2x^2$

work area:

$$\begin{array}{cccc} 4xy^4 & -3xy^5 & -6y^3 & +2x^2 \\ x^1 & x^1 & 0 & x^2 \end{array}$$

$$2x^2 - 3xy^5 + 4xy^4 - 6y^3$$

Solve.

___ 4. $(2g^4h^2)^3$

work area:

$$\begin{array}{l} 4 \times 3 = 12 \\ 2 \times 3 = 6 \\ 2^3 g^{12} h^6 \end{array}$$

$$8g^{12}h^6$$

___ 5. $(3a - 2a^2) + (4 + 6a)$

work area:

$$12a + 18a^2 - 8a^2 - 12a^3$$

$$-12a^3 + 10a^2 + 12a$$

Simplify. Assume that no denominator is equal to zero. (Remember, you cannot have any negative exponents in your answers.) (You may want to re-group numbers with numbers, same letters with letters, etc, so it's easier to apply your exponent rules)

$$6. \quad -2x^3 \cdot x^5$$

$$-2x^8$$

$$6. \quad -2x^8$$

$$7. \quad (5a^2b^6)(23ab^5)$$

$$5 \cdot 23 \quad a^2 \cdot a^1 \quad b^6 \cdot b^5$$

$$115a^3b^{11}$$

$$7. \quad 115a^3b^{11}$$

$$8. \quad (xy^4)^2$$

$$x^2y^8$$

$$8. \quad x^2y^8$$

$$9. \quad 3ab^7 + 2(ab^2)^4 + 4(a^2b^4)^2$$

$$3ab^7 + 2a^4b^8 + 4a^4b^8$$

$$3ab^7 + 6a^4b^8$$

$$9. \quad$$

$$10. \quad \frac{-25m^6}{5m^{10}} \quad -5m^{-4}$$

$$-5$$

$$m^4$$

$$10. \quad \frac{-5}{m^4}$$

$$-10 = -4$$

$$\begin{array}{r} -5-3 \\ 1-6 \end{array}$$

11. $\frac{16b^{-5}d}{32b^3d^{-6}}$

$$\frac{1b^{-8}d^7}{2}$$

$$\frac{1d^7}{2b^8}$$

11. $\frac{d^7}{2b^8}$

$$\frac{16dd^6}{32b^3b^5}$$

12. $\frac{(4x^2y^6)^3}{(-2x^3y^9)^2}$

$$\frac{4^3 x^6 y^{18}}{(-2)^2 x^6 y^{18}}$$

$$\frac{64 \cancel{x^6} \cancel{y^{18}}}{4 \cancel{x^6} \cancel{y^{18}}}$$

16

12. 16

13. Find the degree of the polynomial

$$2x^2y^1 - 4x^5 + 6x^1y^4$$

3 5 5

13. 5

14. Arrange the terms of the polynomial so that the powers of x are in descending order.

$$3\cancel{x^3}y - \cancel{x}y^4 - 3y^2 + \cancel{x^5}$$

x^3 x^1 0 x^5

high to low

$$x^5 + 3x^3y - xy^4 - 3y^2$$

14. _____

Find each sum or difference.

15. $(3m^2 + 5m - 2) - (4m^2 + 7m - 4)$

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

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

16. $(3y^2 + 5y - 6) + (2y^2 - 8y - 2)$

$$3y^2 + 2y^2 + 5y - 8y - 6 - 2$$

17. $(3a^3 - 4b) - (a^3 - b)$

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

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

15. $-m^2 - 2m + 2$

16. $5y^2 - 3y - 8$

17. $2a^3 - 3b$

Find each product.

18. $3x^2y(4x^3y - 2xy^3 + 6xy^4)$

$$12x^5y^2 - 6x^3y^4 + 18x^3y^5$$

18. $12x^5y^2 - 6x^3y^4 + 18x^3y^5$

19. $(4r^3 + 4s^3)(2r^3 - 4s^4)$

$$8r^6 - 16r^3s^4 + 8r^3s^3 - 16s^7$$

19. $8r^6 - 16r^3s^4 + 8r^3s^3 - 16s^7$

20. $(2n + 5)(2n^2 - 6n + 4)$

$$4n^3 - 12n^2 + 8n + 10n^2 - 30n + 20$$

$$4n^3 - 2n^2 - 22n + 20$$

20. $4n^3 - 2n^2 - 22n + 20$

21. $(3y + 7)^2$ (rewrite this before you solve)

$$(3y + 7)(3y + 7)$$

$$9y^2 + 21y + 21y + 49$$

$$42y$$

21. $9y^2 + 42y + 49$

$$22. (x + 5r)(x - 5r)$$

$$x^2 - 5rx + 5rx - 25r^2$$

$$22. x^2 - 25r^2$$

Solve each equation.

$$23. 5x + 8 = 3 + 2(3x - 4)$$

$$23. x = 13$$

$$5x + 8 = 3 + 6x - 8$$

$$5x + 8 = -5 + 6x$$

$$+5 \quad +5$$

$$5x + 13 = 6x$$

$$-5x \quad -5x$$

$$13 = x$$

$$24. -5(2n - 3) = 7(3 - n)$$

$$24. n = -2$$

$$-10n + 15 = 21 - 7n$$

$$+10n \quad +10n$$

$$15 = 21 + 3n$$

$$-21 \quad -21$$

$$\frac{-6 = 3n}{3 \quad 3} \quad n = -2$$

26. Alyssa wants to increase her book collection by a power of two this year and then increase it again by a power of two next year. If she has 2 books now, how many will she have after the second year?

$x = \text{book collection}$

$$x = 2$$

$$(x^2)^2 = x^4$$

$$2^4 = \underline{16 \text{ books}}$$