

Polynomials - Exam Review #7

Find each sum or difference. (Be careful with your negatives!)

1. $(4y + 5) + (-7y - 1)$

$$-3y + 4$$

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

$$-3x^2 - 2x$$

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

$$4k^2 + 6k - 1$$

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

$$3m^2 + m + 7$$

Write each polynomial in standard form. Then, identify the leading coefficient.

5. $8x^2 - 15 + 5x^5$

$$5x^5 + 8x^2 - 15 \quad (5)$$

6. $10x - 7 + x^4 + 4x^3$

$$x^4 + 4x^3 + 10x - 7 \quad (1)$$

7. $13x^2 - 5 + 6x^3 - x$

$$6x^3 + 13x^2 - x - 5 \quad (6)$$

8. $4x + 2x^5 - 6x^3 + 2$

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

Find each product.

9. $x(2x - 5)$

$$2x^2 - 5x$$

10. $2y(y - 4)$

$$2y^2 - 8y$$

11. $3x(5x^2 - x + 4)$

$$15x^3 - 3x^2 + 12x$$

12. $-3n^2(-2n^2 + 3n + 4)$

$$6n^4 + 9n^3 - 12n^2$$

Simplify each expression. (HINT: First, get rid of any parentheses. Then, combine like terms.)

13. $f(5f - 3) - 2f$

$$5f^2 - 3f - 2f$$

$$5f^2 - 5f$$

14. $-p(2p - 8) - 5p$

$$-2p^2 + 8p - 5p$$

$$-2p^2 + 3p$$

15. $2x(3x^2 + 4) - 3x^3$

$$6x^3 + 8x - 3x^3$$

$$3x^3 + 8x$$

16. $4a(5a^2 - 4) + 9a$

$$20a^3 - 16a + 9a$$

$$20a^3 - 7a$$

Find each product. Show all work.

$$17. (n-5)(n+1)$$

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

$$\boxed{n^2 - 4n - 5}$$

$$19. (5a-2)(2a-3)$$

$$10a^2 - 15a - 4a + 6$$

$$\boxed{10a^2 - 19a + 6}$$

Factor each polynomial.

$$21. 6x + 36$$

$$6(x+6) \left\{ \begin{array}{l} \# \text{GCF} : 6 \\ \text{var GCF} : \text{None} \\ \text{Super GCF} : 6 \end{array} \right.$$

$$23. w^3y - wy^2$$

$$wy(w^2 - y) \left\{ \begin{array}{l} \# \text{GCF} = \text{none} \\ \text{var. GCF} = wy \\ \text{Super GCF} = wy \end{array} \right.$$

$$18. (3c+1)(c-2)$$

$$3c^2 - 6c + c - 2$$

$$\boxed{3c^2 - 5c - 2}$$

$$20. (w+4)(w^2+3w-6)$$

$$w^3 + 3w^2 - 6w + 4w^2 + 12w - 24$$

$$\boxed{w^3 + 7w^2 + 6w - 24}$$

$$22. 25n + 15np$$

$$5n(5 + 3p) \left\{ \begin{array}{l} \# \text{GCF} = 5 \\ \text{var. GCF} = n \\ \text{Super GCF} = 5n \end{array} \right.$$

$$24. 4a^2b^2 + 16ab$$

$$4ab(ab + 4) \left\{ \begin{array}{l} \# \text{GCF} = 4 \\ \text{var GCF} = ab \\ \text{Super GCF} = 4ab \end{array} \right.$$

Factor each quadratic trinomial. (Remember, this is when we have to find "magic numbers": What multiplies to ___ and adds up to ___?)

$$25. w^2 - w - 6 \quad \text{add: } -1 / \text{mult: } -6$$

$$\boxed{(w-3)(w+2)}$$

$$26. y^2 - 6y + 8$$

$$\text{add: } -6 \left. \vphantom{\text{add: } -6} \right\} -4, -2$$

$$\text{mult: } 8$$

$$\boxed{(y-4)(y-2)}$$

$$27. x^2 - 8x + 15$$

$$\text{add: } -8 \left. \vphantom{\text{add: } -8} \right\} -5, -3$$

$$\text{mult: } 15$$

$$\boxed{(x-5)(x-3)}$$

$$28. b^2 - 9b + 8$$

$$\text{add: } -9 \left. \vphantom{\text{add: } -9} \right\} -8, -1$$

$$\text{mult: } 8$$

$$\boxed{(x-8)(x-1)}$$

DID NOT HAVE TO DO ↓

$$29. t^2 - 15t + 56$$

$$\text{add: } -15 \left. \vphantom{\text{add: } -15} \right\} -8, -7$$

$$\text{mult: } 56$$

$$\boxed{(x-8)(x-7)}$$

$$30. -4 - 3m + m^2$$

$$m^2 - 3m - 4$$

$$\text{add: } -3 \left. \vphantom{\text{add: } -3} \right\} 1, -4$$

$$\text{mult: } -4$$

$$\boxed{(x+1)(x-4)}$$