

NAME: _____ Score _____ /100
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SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

2 points each for questions 1 – 25. 5 points each for questions 26 – 35.

Circle T or F, whichever is correct.

1. **T** F If a system of equations consists of two equations in two variables then a solution of the system is a solution of both equations in the system.
2. T **F** If a system of equations consists of two equations in two variables then a solution of either equation is a solution of the system.
3. T **F** $(x + y)^2 = x^2 + y^2$
4. T **F** $5(x + 3) = 5x + 3$
5. T **F** The sum of two terms is a term.
6. T **F** If $(x - 5)(x + 7) = 2$, then $x - 5 = 2$ or $x + 7 = 2$.
7. **T** F $x^2 - 5 = (x - \sqrt{5})(x + \sqrt{5})$.
8. **T** F The GCF of $20x^3y$, $10x^2y^2$, and $35x^3$ is $5x^2$
9. **T** F The opposite of a polynomial is formed by replacing each coefficient with its opposite.
10. T **F** The opposite of a polynomial is formed by replacing the leading coefficient with its opposite.

Fill in each of the blanks to make the statements true.

11. The degree of $5x^8$ is **8**.
12. The coefficient of $5x^8$ is **5**.
13. The degree of $3x^5 - 2x^4 + 2x^2 + x - 12$ is **5**.
14. The leading term of $3x^5 - 2x^4 + 21x^2 + 52x^7 - 38x^6$ is **$52x^7$** .
15. The leading coefficient of $3x^5 - 2x^4 + 21x^2 + 52x^7 - 38x^6$ is **52**.
16. Two systems of equations are **equivalent** if they have the same solution set.
17. The solution of a system of two linear equations in two variables is the point where the two graphs **intersect**
18. A **polynomial** is a term or a sum of terms in which all variables have whole number exponents.
19. Two polynomials are **equal** if they have the same degree and corresponding coefficients are equal.

20. A second degree polynomial is called a **quadratic** polynomial.

21. A polynomial consisting of two terms is called a **binomial**.

22. A polynomial consisting of three terms is called a **trinomial**.

23. The product of two polynomials is a polynomial obtained by multiplying **each** term of the **first** times **each** term of the **second** and adding like terms.

24. To factor a number or algebraic expression means to write the number or expression as a **product**.

25. **Zero Factor Property:** If a and b are real numbers and $ab = 0$, then **$a = 0$ or $b = 0$** .

26. Factor $5x^2 + 16x + 3 = (5x + 1)(x + 3)$

27. Factor $9x^2 - 49 = (3x - 7)(3x + 7)$

28. Use the substitution method to solve the system $\begin{cases} 2x + 4y = -6 \\ x = 2y - 5 \end{cases}$.

$$\begin{cases} 2x + 4y = -6 \\ x = 2y - 5 \end{cases} \longrightarrow \begin{cases} 2(2y - 5) + 4y = -6 \\ x = 2y - 5 \end{cases} \longrightarrow \begin{cases} 4y - 10 + 4y = -6 \\ x = 2y - 5 \end{cases} \longrightarrow \begin{cases} 8y - 10 = -6 \\ x = 2y - 5 \end{cases}$$

$$\longrightarrow \begin{cases} 8y = 4 \\ x = 2y - 5 \end{cases} \longrightarrow \begin{cases} y = \frac{1}{2} \\ x = 2y - 5 \end{cases} \longrightarrow \begin{cases} y = \frac{1}{2} \\ x = 2\left(\frac{1}{2}\right) - 5 \end{cases} \longrightarrow \begin{cases} y = \frac{1}{2} \\ x = -4 \end{cases}$$

The solution set is the ordered pair $\left(-4, \frac{1}{2}\right)$

29. Compute the product $-6xy(4x + y) = -24x^2y - 6xy^2$.

30. Compute the product $(3x + 1)(4x^2 - 2x + 5)$

$$(3x + 1)(4x^2 - 2x + 5) = 12x^3 - 6x^2 + 15x + 4x^2 - 2x + 5 = 12x^3 - 2x^2 + 13x + 5$$

31. Solve the equation $(x - 5)(x^2 - 36) = 0$.

By the Zero Factor Property

$$(x - 5) = 0 \text{ OR } (x^2 - 36) = 0$$

$$x = 5 \quad \text{OR} \quad (x - 6)(x + 6) = 0$$

$$x = 5 \quad \text{OR} \quad x - 6 = 0 \quad \text{OR} \quad x + 6 = 0$$

$$x = 5 \quad \text{OR} \quad x = 6 \quad \text{OR} \quad x = -6$$

The solution set is $\{5, 6, -6\}$

32. Factor $9x^2 - 64 = (3x - 8)(3x + 8)$

33. Factor $17x^3y^2 - 34x^4y^2 = 17x^3y^2(1 - 2x)$

34. Factor $x^2 + 10x + 16 = (x + 2)(x + 8)$

35. Factor $25x^2 - 30x + 9 = (5x - 3)^2$