Algebra 1: Unit 5 Review

Name Key

Find each sum or difference.

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

$4m^2 - 6m + 1$

1. _____

2. $(4y^2 + 3y - 7) + (4y^2 - 7y - 2)$

$8y^2 - 4y - 9$

2. _____

Find each product.

3. $3x^2y(2x^2y - 5xy^2 + 8y^3x^2)$

$6x^4y^2 - 15x^3y^3 + 24x^4y^4$

3. _____

4. $(3r^2 + 5t^2)(3r^2 - 5t^2)$

$9r^4 - 25t^4$

4. _____

5. $(5y + 6)^2$

$25y^2 + 60y + 36$

5. _____

Factor each polynomial.

6. $10x^2yz - 22x^3y^2z$

$2x^2yz(5 - 11xy)$

6. _____

7. $2xy - 4x + 3y - 6$

"Not Factorable"

7. _____

8. $m^2 + 12m - 28$

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

8. _____

Factor each polynomial, if possible. If the polynomial cannot be factored, write *prime*.

9. $5t^2 + 17t - 12$

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

9. _____

10. $6p^2 - 20p + 16$

$2[3p^2 - 10p + 8] \rightarrow 2(3p - 4)(p - 2)$

10. _____

11. $3x^5 - 75x^3$

$3x^3(x^2 - 25) \rightarrow 3x^3(x - 5)(x + 5)$

11. _____

12. $25x^2 + 70x - 49$

$(5x - 7)^2$ not factorable or prime

12. _____

Solve each equation. Check the solutions.

13. $5x + 8 = 3 + 2(3x - 4)$

$5x+8 = 6x-5$

$x=13$ one sol

14. $-5(2n - 3) = 7(3 - n)$

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

$-3n = 6$

$n=-2$ one sol

15. $(x + 5)(4x - 3) = 0$

$-5, \frac{3}{4}$ 2 sol

16. $12b^2 - 8b = 0$

$4b(3b-2)=0$

$0, \frac{2}{3}$ 2 sol

17. $9n^2 + 6n = 3$

$3(3n^2+2n-1)=0$

$3(3n-1)(n+1)=0$

$\frac{1}{3}, -1$ 2 sol

18. $4b^2 - 8b - 5 = 0$

$b^2-8b-20=0$

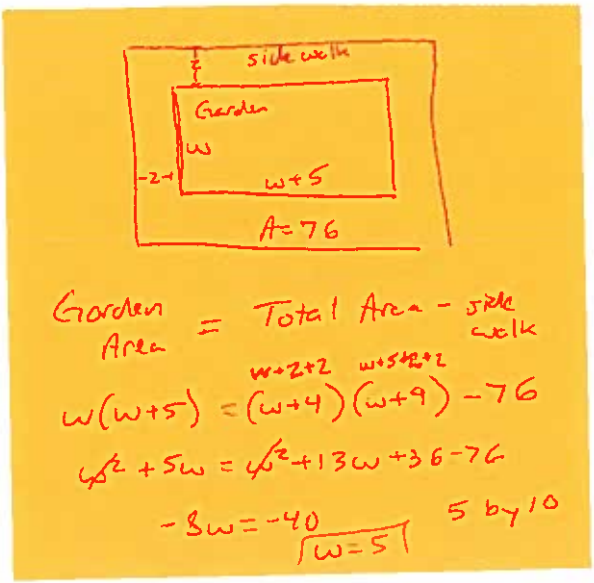
$(b-\frac{10}{4})(b+\frac{2}{4})=0$

$\frac{5}{2}, -\frac{1}{2}$ 2 sol

19. $64x^2 - 1 = 0$

$(8x-1)(8x+1)=0$

$\pm\frac{1}{8}$ 2 sol



Garden Area = Total Area − sidewalk

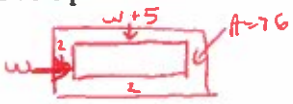
$w(w+5) = (w+4)(w+9) - 76$

$w^2+5w = w^2+13w+36-76$

$-8w = -40$

$w=5$ 5 by 10

20. The length of a rectangular garden is 5 feet longer than its width. The garden is surrounded by a 2-foot-wide sidewalk. The sidewalk has an area of 76 square feet. Find the dimensions of the garden.



SEE ORANGE ABOVE ↑

23. Lanu hit a volleyball into the air with an initial upward velocity of 24 feet per second. The height h in feet of the ball above the ground can be modeled by $h = -16t^2 + 24t + 3$, where t is the time in seconds after Lanu hit the volleyball. Find the time it takes the ball to reach 12 feet above the ground.

$12 = -16t^2+24t+3$

$0 = -16t^2+24t-9$

$0 = -[t^2-24t+144]$

$0 = -(t-12)(t-12)$

$0 = -(4t-3)^2$

$t = \frac{3}{4}$

24. The area of a rectangular room is 104 square feet. The length of the room is 5 feet longer than the width. Find the dimensions of the room.

$w(w+5) = 104$

$w^2+5w-104=0$

$(w+13)(w-8)=0$

$-13, 8$

8 by 13

16. _____

17. _____

18. _____

19. _____

20. _____

23. _____

24. _____