

Chapter Test

Form A

Chapter 9

Write each polynomial in standard form. Then name each expression based on its degree and number of terms.

1. $2x^3 - x^2 + 4x$

$2x^3 - x^2 + 4x$
Cubic trinomial

2. $y^2 + 3y + 6 - 4y^2 - 6y$

$-3y^2 - 3y + 6$
Quadratic trinomial

3. $8 - 6w - 12w - 8w^2 - 7 - 3w^3$

$-3w^3 - 8w^2 - 18w + 1$
Cubic Polynomial

4. $6x^5 + 3x^3 - 7x^5 - 4x^3$

$-x^5 - x^3$
Fifth degree binomial

Simplify. Write each answer in standard form.

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

$2x^2 - x + 2$

6. $(2x^2 + 6x + 7) + (3x^2 + 3x - 5)$

$5x^2 + 9x + 2$

7. $(3x^2 + 4x - 10) - (2x + 7 - 4x^2)$

$7x^2 + 2x - 17$

8. $(8x - 4x^2 + x^3) - (8x^2 + 4x^3 - 7x)$

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

9. Open-Ended Write a trinomial with degree 5.

$8x^5 + 2x^4 - 7x$

Simplify each product. Write in standard form.

10. $8x(3x + 4 - x^2)$

$-8x^3 + 24x^2 + 32x$

11. $-y(8y^2 + y)$

$-8y^3 - y^2$

12. $7x(3 - x + 6x^3)$

$42x^4 - 7x^2 + 21x$

13. $5y(y^5 + 8y^3)$

$5y^6 + 40y^4$

14. $6x(x^2 + 2x + 1)$

$6x^3 + 12x^2 + 6x$

15. $(y + 4)(y + 3)$

$y^2 + 7y + 12$

16. $(a + 3)(a - 1)$

$a^2 + 2a - 3$

17. $(2y - 8)(y - 4)$

$2y^2 - 16y + 32$

18. $(3x + 4)(5x - 9)$

$15x^2 - 7x - 36$

19. $(x - 1)(x^2 + 6x + 4)$

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

20. $(2x^2 - 6x - 5)(3 - x)$

$-2x^3 + 12x^2 - 13x - 15$

21. $(8x - 7)(3x + 2)$

$24x^2 - 5x - 14$

Write the GCF of each polynomial.

22. $12x^3 + 6x^2 - 3x$

$3x$

23. $18x^2 + 16x - 12x^3$

$2x$

24. $6y^2 - 12y^3 + 36y^4$

$6y^2$

25. $-10y^3 + 8y^2 - 20y$

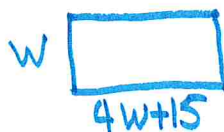
$2y$

26. Writing A student commented, "Factoring undoes the distributive property." What do you think the student meant? Explain and give an example.

$(2x+2) = 2(x+1)$

Write an expression for each situation as a product and in standard form.

27. A settling pond at a sewage treatment facility is rectangular. The length of the pond is 15 ft more than 4 times its width w . What is the area of the pond?

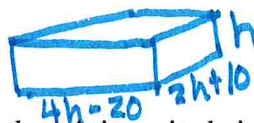


$w(4w+15) = 4w^2 + 15w$

Chapter Test (continued)

Form A

Chapter 9

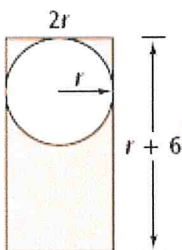


28. The length of an airplane hangar is 20 ft less than 4 times its height h . The width of the hangar is 10 ft more than 2 times its height. What polynomial expression represents the volume of the hangar?

$$h(4h-20)(2h+10) = 8h^3 - 200h$$

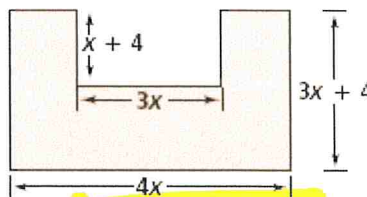
Geometry Write an expression for the area of each shaded region. Write your answer in simplest form.

29.



$$\begin{aligned} A_{\text{circle}} &= \pi r^2 \\ 2r(r+6) - \pi r^2 \\ 2r^2 + 12r - \pi r^2 \end{aligned}$$

30.



$$\begin{aligned} 4x(3x+4) &= \\ 12x^2 + 16x \end{aligned}$$

$$\begin{aligned} 3x(x+4) &= 3x^2 + 12x \end{aligned}$$

$$9x^2 + 4x = 12x^2 + 16x - 3x^2 - 12x$$

Factor each expression.

31. $x^2 - 6x + 5$

$$(x-5)(x-1)$$

32. $y^2 + 18y + 81$

$$(y+9)^2$$

33. $16x^2 + 48x + 36$

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

34. $y^2 - 144$

$$(y+12)(y-12)$$

35. $y^2 - 10y + 25$

$$(y-5)^2$$

36. $9x^2 - 64$

$$(3x+8)(3x-8)$$

37. $64x^2 + 40x + 6$

$$\begin{aligned} (8x+2)(8x+3) \\ = 2(4x+1)(8x+3) \end{aligned}$$

38. $14x^2 - 56$

$$14(x+2)(x-2)$$

Write the value missing from each perfect square trinomial.

39. $x^2 + \underline{16}x + 64$

40. $\underline{4}y^2 + 16y + 16$

41. $25x^2 - 60x + \underline{36}$

42. $36y^2 - \underline{120}y + 100$

Identify the factor common to the first two terms and the factor common to the last two terms of the polynomial.

43. $9x^5 + 6x^4 - 12x + 8$

$$3x^4; 4$$

44. $20x^4 + 16x^3 - 5x - 4$

$$4x^3; -1$$

Factor completely.

45. $15y^3 + 12y^2 + 5y + 4$

$$(3y^2+1)(5y+4)$$

46. $6x^2 - 2x - 20$

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

47. $x^4 - 6x^3 + 6x - 36$

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

48. $12x^3 - 18x^2 - 8x + 12$

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

49. $24y^3 + 56y^2 - 6y - 14$

$$\begin{aligned} 2(2y+1)(2y-1)(3y+7) \\ 2(4y^2-1)(3y+7) \end{aligned}$$

50. $-4y^3 + 3y^2 + 8y - 6$

$$\begin{aligned} = 2(3x-2)(2x-3) \\ (y^2-2)(-4y+3) \end{aligned}$$

51. Open-Ended Writing $(x+y)^2$ as x^2+y^2 illustrates a common error.

Explain.

$$\begin{aligned} (x+y)^2 &\neq x^2+y^2 \\ &= x^2+2xy+y^2 \end{aligned}$$