CHAPTER 8

Chapter Review

Key

Know it! Note

8-1 Factors and Greatest Common Factors

Write the prime factorization of each number.

1. 66 $2 \cdot 3 \cdot 11$

2. 72 $2^3 \cdot 3^2$

3. 325 $5^2 \cdot 13$

4. 169 13^2

Find the GCF of each pair of monomials.

5. $30r^4$ and $12r^3$ $6r^3$

6. $24z^3$ and $32z^2$ $8z^2$

7. $16x^2y$ and $84xy^2$ $4xy$

8. ~~$99s^{16}t^3$ and $45s^7t^6$~~

8-2 Factoring by GCF

Factor each polynomial. Check your answer.

9. $2s^2 - 4$ Not Factorable

10. $-a^3 - 4a$ $-a(a^2+4)$

11. $36y^4 + 24y^2$ $12y^2(3y^2+2)$

12. ~~$4x^2 - 8x + 8$~~

13. $3b^3 - 15b^2 - 33b$ $3b(b^2-5b-11)$

14. $14p^3 - 21p^2q$ $7p^2(2p-3q)$

Factor each polynomial by grouping. Check your answer.

15. $r^3 + 3r^2 + 2r + 6$
$r^2(r+3) + 2(r+3)$
$(r^2+2)(r+3)$

16. $7y^3 - 14y^2 - y + 2$
$7y^2(y-2) - 1(y-2)$
$(7y^2-1)(y-2)$

17. ~~$5x^3 + 10x^2 + 3x + 6$~~

8-3 Factoring $x^2 + bx + c$

Factor each trinomial. Check your answer.

18. $a^2 - 5a - 14$ $(a-7)(a+2)$

19. $x^2 + 7x + 10$ $(x+5)(x+2)$

20. $n^2 + 4n - 12$ $(n+6)(n-2)$

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21. $f^2 - 11f + 18$
$(f-9)(f-2)$

22. $z^2 - z - 20$
$(z-5)(z+4)$

23. $t^2 - t - 30$
$(t-6)(t+5)$

24. Factor $x^2 - 7x + 12$. Check your answer.
$(x-4)(x-3)$

$(x-4)(x-3)$
$x^2 - 3x - 4x + 12$
$x^2 - 7x + 12$

8-4 Factoring $ax^2 + bx + c$

Factor each trinomial. Check your answer.

25. $3a^2 + 5a + 2$
$(3a+2)(a+1)$

26. $6s^2 + 17s + 12$
$(3s+4)(2s+3)$

27. $5y^2 + 18y + 8$

8-5 Factoring Special Products

Determine whether each trinomial is a perfect square. If so, factor it.

32. $9t^2 - 30t + 25$
$(3t-5)(3t-5)$
Yes

33. $z^2 + 8z - 16$
No

34. $4y^2 + 36y + 81$

35. $4x^2 - 28x + 49$
$(2x-7)(2x-7)$
Yes

36. $b^2 - 16b + 64$
Yes
$(b-8)(b-8)$

37. $16m^2 + 12m + 9$

Determine whether each trinomial is the difference of two squares. If so, factor it.

38. $1 - 10s^4$
No

39. $t^2 - 9$
Yes
$(t+3)(t-3)$

40. $121x^2 - 100$
Yes
$(11x-10)(11x+10)$

8-6 Choosing a Factoring Method

Factor each polynomial completely. Check your answer.

44. $25b^3 + 30b^2 - 60b$
$5b(5b^2 + 6b - 12)$

45. $2x^2y + 16xy + 30y$
$2y(x^2 + 8x + 15)$
$2y(x+3)(x+5)$

46. $c^3 - 6c^2 + 4c + 24$