

Summer Assignment**Factor each completely.**

1) $50xy + 60x + 60y^2 + 72y$

2) $24xy + 320y^2x - 192x^2 - 40y^3$

3) $x^6 + 65x^3 + 64$

4) $x^6 - 1$

5) $2v^3 + 15v^2 - 50v$

6) $7n^2 + 16n + 9$

7) $-9r^2 - 53r + 6$

8) $5x^5 - 43x^3 + 56x$

9) $-u^9 + 12u^5 - 20u$

10) $-m^8 + 14m^4 - 40$

11) $7 - 63r^2$

12) $9r^2 - 4$

13) $784x^2 + 336x + 36$

14) $567x^3 - 1183x$

15) $-x^3 - 27$

16) $250x^7 - 128xy^6$

Solve each equation.

17) $n^2 + 5n = 24$

18) $16b^2 + 106b + 93 = 6b - 7$

19) $3m^2 + 4 = 247$

20) $4m^2 + 6m = -3m - 3m^2 + 7$

Solve each equation by completing the square.

21) $n^2 - 8n - 88 = -4$

22) $6a^2 + 16a - 34 = 3$

Simplify. Use absolute value signs when necessary.

$$23) 5\sqrt[3]{625m^6n^4p^4}$$

$$24) 5\sqrt[3]{54xy^8z^5}$$

Simplify.

$$25) 3\sqrt[3]{189} + 3\sqrt[5]{192} + 2\sqrt[3]{6} + 4\sqrt[3]{189}$$

$$26) 2\sqrt[3]{6} - \sqrt[3]{448} - 3\sqrt[3]{2} + 2\sqrt[3]{6}$$

$$27) \frac{5}{3 + 2\sqrt{2}}$$

$$28) \frac{9}{5 - 9\sqrt{10}}$$

$$29) \frac{4}{\sqrt[3]{6x}}$$

$$30) \frac{v}{\sqrt[4]{3v}}$$

Write each expression in exponential form.

$$31) \frac{1}{\sqrt[3]{5x^2}}$$

$$32) (\sqrt{6m})^3$$

Simplify.

33) $(n^9)^{\frac{1}{3}}$

34) $(x^2)^{\frac{1}{2}}$

Simplify. Your answer should contain only positive exponents.

35) $-x^2 \cdot (y^2)^3$

36) $u^{-4}v^4 \cdot (uv^4)^3$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

37)
$$\frac{v \cdot \left(u^{\frac{7}{4}}v^2\right)^{\frac{3}{2}}}{u^0v^{\frac{3}{2}}}$$

38)
$$\frac{x^{\frac{3}{2}}}{(y^0)^{-1} \cdot x^0y^{\frac{3}{2}}}$$

39)
$$\frac{y^2}{x^{-\frac{5}{4}}y^{-1} \cdot \left(x^{\frac{3}{2}}y^2\right)^{\frac{1}{2}}}$$

40)
$$\left(\frac{x^{-1}y^{\frac{1}{2}}}{x^{\frac{1}{3}} \cdot x^{-2}y^{\frac{3}{2}}}\right)^{-1}$$

Solve each equation.

$$41) 512 = (v + 22)^{\frac{3}{2}}$$

$$42) (33 - 2n)^{\frac{3}{2}} = 27$$

$$43) -3 + 5 \cdot (32x)^{-\frac{3}{2}} = -\frac{1531}{512}$$

$$44) 2570 = 5(10r + 4)^{\frac{3}{2}} + 10$$

$$45) \frac{81^m}{\left(\frac{1}{81}\right)^{-m}} = 27$$

$$46) 16^{-x} \cdot \left(\frac{1}{4}\right)^{-2x-1} = 16$$

$$47) \left(\frac{1}{81}\right)^{3v} \cdot \left(\frac{1}{9}\right)^{-3v+3} = 243^{-v}$$

$$48) 64^{-2x} \cdot 16^{2x+3} = 4^{-x+3}$$

Solutions:

1. $2(5x + 6y)(5y + 6)$

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

3. $(x + 4)(x^2 - 4x + 16)(x + 1)(x^2 - x + 1)$

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

5. $v(2v - 5)(v + 10)$

6. $(7n + 9)(n + 1)$

7. $-(r + 6)(9r - 1)$

8. $x(5x^2 - 8)(x^2 - 7)$

9. $-u(u^4 - 2)(u^4 - 10)$

10. $-(m^4 - 10)(m^2 - 2)(m^2 + 2)$

11. $7(1 + 3r)(1 - 3r)$

12. $(3r + 2)(3r - 2)$

13. $4(14x + 3)^2$

14. $7x(9x + 13)(9x - 13)$

15. $-(x + 3)(x^2 - 3x + 9)$

16. $2x(5x^2 - 4y^2)(25x^4 + 20x^2y^2 + 16y^4)$

17. $n = -8, 3$

18. $b = -\frac{5}{4}, -5$

19. $m = \pm 9$

20. $m = \frac{-9 \pm \sqrt{277}}{14}$

21. $n = 14, -6$

22. $a = \frac{-8 \pm \sqrt{286}}{6}$

23. $25m^2np^3\sqrt{5np}$

24. $15y^2z^3\sqrt{2xy^2z^2}$

25. $21\sqrt[3]{7} + 6\sqrt[5]{6} + 2\sqrt[3]{6}$

26. $4\sqrt[3]{6} - 4\sqrt[3]{7} - 3\sqrt[3]{2}$

27. $15 - 10\sqrt{2}$

28. $\frac{-45-81\sqrt{10}}{785}$

29. $\frac{2\sqrt[3]{36x^2}}{3x}$

30. $\frac{\sqrt[4]{27v^3}}{3}$

31. $(5x)^{-\frac{1}{3}}$

32. $(6m)^{\frac{3}{2}}$

33. n^3

34. x

35. $-x^2y^6$

36. $\frac{v^{16}}{u}$

37. $v^{\frac{5}{2}}u^{\frac{21}{8}}$

38. $\frac{x^{\frac{3}{2}}y^{\frac{1}{2}}}{y^2}$

39. $y^2x^{\frac{1}{2}}$

40. $\frac{yx^{\frac{1}{3}}}{x}$

41. $v = 42$

42. $n = 12$

43. $x = 2$

44. $r = 6$

45. *no solution*46. *no solution*

47. $v = -6$

48. $x = 3$