

$$36. 625^{-1/4} = \frac{1}{625^{1/4}} = \frac{1}{5}$$

$$37. \left(\frac{27}{64}\right)^{-1/3} = \frac{27^{-1/3}}{64^{-1/3}} = \frac{64^{1/3}}{27^{1/3}} \\ = \frac{4}{3}$$

$$38. \left(\frac{121}{100}\right)^{-3/2} = \frac{1}{\left(\frac{121}{100}\right)^{3/2}} = \frac{1}{\left[\left(\frac{121}{100}\right)^{1/2}\right]^3} \\ = \frac{1}{\left(\frac{11}{10}\right)^3} = \frac{1}{\frac{1331}{1000}} = \frac{1000}{1331}$$

$$39. 2^{1/2} \cdot 2^{3/2} = 2^{1/2+3/2} = 2^{4/2} \\ = 2^2$$

$$40. 27^{2/3} \cdot 27^{-1/3} = 27^{(2/3)+(-1/3)} \\ = 27^{2/3-1/3} \\ = 27^{1/3}$$

$$41. \frac{4^{2/3} \cdot 4^{5/3}}{4^{1/3}} = \frac{4^{2/3+5/3}}{4^{1/3}} \\ = 4^{7/3-1/3} = 4^{6/3} \\ = 4^2$$

$$42. \frac{3^{-5/2} \cdot 3^{3/2}}{3^{7/2} \cdot 3^{-9/2}} \\ = 3^{(-5/2)+(3/2)-(7/2)-(-9/2)} \\ = 3^{-5/2+3/2-7/2+9/2} \\ = 3^0 = 1$$

$$43. \frac{7^{-1/3} \cdot 7r^{-3}}{7^{2/3} \cdot (r^{-2})^2} \\ = \frac{7^{-1/3+1} r^{-3}}{7^{2/3} \cdot r^{-4}} \\ = 7^{-1/3+3/3-2/3} r^{-3-(-4)} \\ = 7^0 r^{-3+4} = 1 \cdot r^1 = r$$

$$44. \frac{12^{3/4} \cdot 12^{5/4} \cdot y^{-2}}{12^{-1} \cdot (y^{-3})^{-2}} \\ = \frac{12^{3/4+5/4} \cdot y^{-2}}{12^{-1} \cdot y^{(-3)(-2)}} = \frac{12^{8/4} \cdot y^{-2}}{12^{-1} \cdot y^6} \\ = \frac{12^2 \cdot y^{-2}}{12^{-1} y^6} \\ = 12^{2-(-1)} \cdot y^{-2-(-6)} = 12^3 y^{-8} \\ = \frac{12^3}{y^8}$$

$$45. \frac{6k^{-4} \cdot (3k^{-1})^{-2}}{2^3 \cdot k^{1/2}} \\ = \frac{2 \cdot 3k^{-4}(3^{-2})(k^2)}{2^3 k^{1/2}} \\ = 2^{1-3} 3^{1+(-2)} k^{-4+2-1/2} \\ = 2^{-2} 3^{-1} k^{-5/2} \\ = \frac{1}{2^2} \cdot \frac{1}{3} \cdot \frac{1}{k^{5/2}} = \frac{1}{2^2 3 k^{5/2}}$$

$$\text{or } \frac{1}{12k^{5/2}}$$

$$46. \frac{8p^{-3}(4p^2)^{-2}}{p^{-5}} = \frac{8p^{-3} \cdot 4^{-2} p^{(2)(-2)}}{p^{-5}} \\ = \frac{8p^{-3} 4^{-2} p^{-4}}{p^{-5}} \\ = 8 \cdot 4^{-2} p^{(-3)+(-4)-(-5)} \\ = 8 \cdot 4^{-2} p^{-3-4+5} \\ = 8 \cdot 4^{-2} p^{-2} \\ = 8 \cdot \frac{1}{4^2} \cdot \frac{1}{p^2} \\ = 8 \cdot \frac{1}{16} \cdot \frac{1}{p^2} \\ = \frac{8}{16p^2} = \frac{1}{2p^2}$$

$$47. \frac{a^{4/3} \cdot b^{1/2}}{a^{2/3} \cdot b^{-3/2}} = a^{4/3-2/3} b^{1/2-(-3/2)} \\ = a^{2/3} b^2$$

$$48. \frac{x^{1/3} \cdot y^{2/3} \cdot z^{1/4}}{x^{5/3} \cdot y^{-1/3} \cdot z^{3/4}} \\ = x^{1/3-(5/3)} y^{(2/3)-(-1/3)} z^{1/4-(3/4)} \\ = x^{1/3-5/3} y^{2/3+1/3} z^{1/4-3/4} \\ = x^{-4/3} y^{3/3} z^{-2/4} \\ = \frac{y}{x^{4/3} z^{2/4}} \\ = \frac{y}{x^{4/3} z^{1/2}}$$

$$49. \frac{k^{-3/5} \cdot h^{-1/3} \cdot t^{2/5}}{k^{-1/5} \cdot h^{-2/3} \cdot t^{1/5}} \\ = k^{-3/5-(-1/5)} h^{-1/3-(-2/3)} t^{2/5-1/5} \\ = k^{-3/5+1/5} h^{-1/3+2/3} t^{2/5-1/5} \\ = k^{-2/5} h^{1/3} t^{1/5} \\ = \frac{h^{1/3} t^{1/5}}{k^{2/5}}$$