

Try This 1 and 2 Possible Solutions

TT 1. Complete “Exercises” questions 4.b, 6.b, 7.e, 9, 10.c, 11.e, 12.f, 13.c, 15, and 19 on page 227 and 228.

$$\begin{aligned} 4. \quad b) \quad 81^{0.25} &= 81^{\frac{1}{4}} \\ &= \sqrt[4]{81} \\ &= 3 \end{aligned}$$

$$6. \quad b) \quad \sqrt[4]{90} = 90^{\frac{1}{4}}$$

$$\begin{aligned} 7. \quad e) \quad 8^{\frac{4}{3}} &= \left(\sqrt[3]{8}\right)^4 \\ &= (2)^4 \\ &= 16 \end{aligned}$$

$$9. \sqrt[3]{350} = 350^{\frac{1}{3}}$$

$$\begin{aligned} 10. \quad c) \quad \left(\frac{3}{8}\right)^{2.5} &= \left(\frac{3}{8}\right)^{\frac{5}{2}} \\ &= \left(\sqrt{\frac{3}{8}}\right)^5 \end{aligned}$$

$$11. \quad e) \quad \left(\sqrt{\frac{5}{4}}\right)^3 = \left(\frac{5}{4}\right)^{\frac{3}{2}}$$

$$\begin{aligned} 12. \quad f) \quad \left(\frac{4}{25}\right)^{\frac{3}{2}} &= \left(\sqrt{\frac{4}{25}}\right)^3 \\ &= \left(\frac{2}{5}\right)^3 \\ &= \frac{2^3}{5^3} \\ &= \frac{8}{125} \end{aligned}$$

$$\begin{aligned} 13. \quad c) \quad 10 &= \left(10^2\right)^{\frac{1}{2}} \\ &= 100^{\frac{1}{2}} \\ &= \sqrt{100} \end{aligned}$$

15. Convert all the numbers into powers with base 4:

$$\sqrt[3]{4} = 4^{\frac{1}{3}}$$

$$4^{\frac{3}{2}}$$

$$4^2$$

$$\left(\frac{1}{4}\right)^{\frac{3}{2}} = \left(4^{-1}\right)^{\frac{3}{2}} = 4^{-\frac{3}{2}}$$

Arrange the powers of 4 in order from lowest exponent to highest exponent:

$$4^{-\frac{3}{2}}, 4^{\frac{1}{3}}, 4^{\frac{3}{2}}, 4^2$$

$$\begin{aligned} 19. \quad SA &= 0.096 \text{ m}^{0.7} = 0.096(40)^{0.7} \\ &= 1.27 \text{ m}^2 \end{aligned}$$

TT 2. Complete the following “Exercises” questions 10.a, 10.d, 10.f, 10.g, 15.b, 15.d and 16.c., 16.d on page 242 and 243.

$$\begin{aligned} 10. \text{ a) } 1.5^{\frac{3}{2}} \times 1.5^{\frac{1}{2}} &= 1.5^{\frac{3}{2} + \frac{1}{2}} \\ &= 1.5^2 \\ &= 2.25 \end{aligned}$$

$$\begin{aligned} 10. \text{ d) } \left(\frac{4}{5}\right)^{\frac{4}{3}} \times \left(\frac{4}{5}\right)^{-\frac{4}{3}} &= \left(\frac{4}{5}\right)^{\frac{4}{3} + \left(-\frac{4}{3}\right)} \\ &= \left(\frac{4}{5}\right)^0 \\ &= 1 \end{aligned}$$

$$\begin{aligned} 10. \text{ f) } \frac{\left(-\frac{3}{8}\right)^{\frac{2}{3}}}{\left(-\frac{3}{8}\right)^{-\frac{1}{3}}} &= \left(-\frac{3}{8}\right)^{\frac{2}{3} - \left(-\frac{1}{3}\right)} \\ &= \left(-\frac{3}{8}\right)^{\frac{3}{3}} \\ &= -\frac{3}{8} \end{aligned}$$

$$\begin{aligned}
 10. \text{ g) } \frac{0.49^{\frac{5}{2}}}{0.49^4} &= 0.49^{\frac{5}{2}-4} \\
 &= 0.49^{\frac{5}{2}-\frac{8}{2}} \\
 &= 0.49^{-\frac{3}{2}} \\
 &= \frac{1}{0.49^{\frac{3}{2}}} \\
 &= \frac{1}{(\sqrt{0.49})^3} \\
 &= \frac{1}{0.7^3} \\
 &= \frac{1000}{343}
 \end{aligned}$$

$$\begin{aligned}
 15. \text{ b) } (a^{-1}b^{-2})(a^{-2}b^{-3}) &= a^{-3}b^{-5} \\
 &= \frac{1}{a^3b^5} \\
 &= \frac{1}{(-2)^3(1)^5} \\
 &= \frac{1}{-8} \\
 &= -\frac{1}{8}
 \end{aligned}$$

$$\begin{aligned}
 15. \text{ d) } \left(\frac{a^{-7}b^7}{a^{-9}b^{10}} \right)^{-5} &= \frac{a^{35}b^{-35}}{a^{45}b^{-50}} \\
 &= a^{35-45}b^{-35-(-50)} \\
 &= a^{-10}b^{15} \\
 &= \frac{b^{15}}{a^{10}} \\
 &= \frac{1^{15}}{(-2)^{10}} \\
 &= \frac{1}{1024}
 \end{aligned}$$

$$\begin{aligned}
 16. \text{ c) } \frac{-9a^{-4}b^{\frac{3}{4}}}{3a^2b^{\frac{1}{4}}} &= -3a^{-4-2}b^{\frac{3}{4}-\frac{1}{4}} \\
 &= -3a^{-6}b^{\frac{1}{2}} \\
 &= -\frac{3\sqrt{b}}{a^6}
 \end{aligned}$$

16. d)

$$\begin{aligned}
 \left(\frac{-64c^6}{a^9b^{-\frac{1}{2}}} \right)^{\frac{1}{3}} &= \frac{-64^{\frac{1}{3}}c^{6 \times \frac{1}{3}}}{a^{9 \times \frac{1}{3}}b^{-\frac{1}{2} \times \frac{1}{3}}} \\
 &= -\frac{4c^2}{a^3b^{-\frac{1}{6}}} \\
 &= -\frac{4b^{\frac{1}{6}}c^2}{a^3} \\
 &= -\frac{4\sqrt[6]{bc^2}}{a^3}
 \end{aligned}$$