

Answer Key RH Unit 2 Review

$$1) \frac{3^2 \cdot 3}{3^3} = \boxed{27}$$

$$2) \frac{(2^{-2})^2}{2^{-4}} = \frac{1}{2^4} = \boxed{\frac{1}{16}}$$

$$3) \frac{\left(\frac{3}{2}\right)^{-3}}{\left(\frac{2}{3}\right)^3} = \frac{2^3}{3^3} = \boxed{\frac{8}{27}}$$

$$4) \frac{(4^0 \cdot 5^3)^{-2}}{5^4} = \frac{5^3}{5^4} = (5^{-1})^{-2} = 5^2 = \boxed{25}$$

$$5) \frac{x^4 \cdot x^{-6}}{x^5} = \frac{x^{-2}}{x^5} = x^{-7} = \boxed{\frac{1}{x^7}}$$

$$6) \frac{\left(\frac{1}{2}x^2\right)^3}{\left(\frac{1}{2}\right)^3(x^2)^3} = \frac{1 \cdot x^6}{8} = \boxed{\frac{x^6}{8}}$$

$$7) \frac{-(x^3y)^2}{-(x^3)^2y^2} = \frac{-x^6y^2}{-x^6y^2} = \boxed{1}$$

$$8) 7x^{-5}y^{-1} \rightarrow \boxed{\frac{7}{x^5y}}$$

$$9) \frac{(2x)^4}{x^2} = \frac{(2x^{-1})^4}{2^4x^{-4}} = \frac{16}{x^4}$$

$$10) \frac{1}{11x^2y^{-7}} = \frac{x^2y^7}{11}$$

$$11) \frac{(2^{-1}x^{-10})^4}{2^{-4}x^{-40}} = \frac{1}{16x^{40}}$$

$$12) \frac{(-2x^2y)(x^3y)^{-4}}{-2x^2y \cdot x^{-12}y^{-4}} = \frac{-2x^{-10}y^{-3}}{x^{10}y^3}$$

$$13) \frac{x^{-4}}{(12y^2)^{-2}} = \frac{x^{-4}}{12^{-2}y^{-4}} = \frac{12^2y^4}{x^4} = \boxed{\frac{144y^4}{x^4}}$$

$$14) \frac{(x^{-2}y)^3}{(x^8y^{-5})^3} = \frac{(x^{-10}y^6)^3}{x^{-30}y^{18}} = \frac{y^{18}}{x^{30}}$$

$$15) \frac{3xy^4}{2x^5y} \cdot \frac{2x^{-3}y^2}{4y} = \frac{6x^{-2}y^6}{4x^5y^2} = \frac{9}{4} \cdot x^{-7}y^4 = \boxed{\frac{9y^4}{4x^7}}$$

$$16) \frac{(4x^2y^{-1})^{-3}}{xy} \cdot \frac{y^4}{x^6y^2} = \frac{(4xy^{-2})^{-3}}{4^{-3}x^{-3}y^6} \cdot \frac{y^2}{x^6} = \frac{1}{64} \cdot \frac{1}{x^3} \cdot \frac{y^8}{x^6} = \boxed{\frac{y^8}{64x^9}}$$

$$17) \frac{64^{\frac{3}{2}}}{(\sqrt{64})^3}$$

$$\frac{8^3}{8^3}$$

$$\boxed{512}$$

$$18) \frac{27^{-\frac{4}{3}}}{(\sqrt[3]{27})^{-4}}$$

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

$$\frac{1}{3^4} = \boxed{\frac{1}{81}}$$

$$19) \left(\frac{125}{-64}\right)^{-\frac{2}{3}}$$

$$\left(\frac{-64}{125}\right)^{\frac{2}{3}}$$

$$\left(\sqrt[3]{\frac{-64}{125}}\right)^2$$

$$\left(\frac{-4}{5}\right)^2$$

$$\boxed{\frac{16}{25}}$$

$$20) \left(\frac{625x^8y^{12}}{81w^4}\right)^{-\frac{3}{4}}$$

$$\left(\frac{81w^4}{625x^8y^{12}}\right)^{\frac{3}{4}}$$

$$\left(\sqrt[4]{\frac{81w^4}{625x^8y^{12}}}\right)^3$$

$$\left(\frac{3w}{5x^2y^3}\right)^3$$

$$\boxed{\frac{27w^3}{125x^6y^9}}$$

$$21) 8^{x+6} = 8^{11}$$

$$x+6 = 11$$

$$\boxed{x = 5}$$

$$22) \left(\frac{1}{27}\right)^{16} = 3^{2x+4}$$

$$(3^{-3})^{16} = 3^{2x+4}$$

$$-3(16) = 2x+4$$

$$-48 = 2x+4$$

$$-52 = 2x$$

$$\boxed{-26 = x}$$

$$23) 64^{x+5} = 32^{2x+1}$$

$$(2^6)^{x+5} = (2^5)^{2x+1}$$

$$6(x+5) = 5(2x+1)$$

$$6x+30 = 10x+5$$

$$30 = 4x+5$$

$$25 = 4x$$

$$\boxed{\frac{25}{4} = x}$$

$$24) \left(\frac{1}{4}\right)^{2x} = 16^{5x-12}$$

$$(4^{-1})^{2x} = (4^2)^{5x-12}$$

$$-1(2x) = 2(5x-12)$$

$$-2x = 10x-24$$

$$-12x = -24$$

$$\boxed{x = 2}$$

$$25) \frac{1}{m^3} = (m^b)^{\frac{6}{5}}$$

$$m^{-3} = (m^b)^{\frac{6}{5}}$$

$$-3 = \frac{6}{5}b$$

$$-3 \cdot \frac{5}{6} = b$$

$$\boxed{\frac{-5}{2} = b}$$

$$26) 25^{c-4} = \left(\frac{1}{125}\right)^{4c+5}$$

$$(5^2)^{c-4} = (5^{-3})^{4c+5}$$

$$2(c-4) = -3(4c+5)$$

$$2c-8 = -12c-15$$

$$14c-8 = -15$$

$$14c = -7$$

$$\boxed{c = -\frac{1}{2}}$$