First Name:_____   Last Name:_____

L.03 – Worksheet – Integral Exponents

Q1: $(x^{-2}x^{-3})^4$

$(x^{-5})^4$

x^{-20}

$$\boxed{\frac{1}{x^{20}}}$$

Q2: $(x^4)^{-3}2x^4$

$x^{-12} \cdot 2x^4 \quad = \quad 2x^{-8} \quad = \quad \boxed{\frac{2}{x^8}}$

Q3: $(n^3)^3 2n^{-1}$

$n^9 \cdot 2n^{-1} = \boxed{2n^8}$

Q4: $(2v)^2 2v^2$

$4v^2 \cdot 2v^2 = \boxed{8v^4}$

Q5: $\dfrac{2x^2y^4 * 4x^2y^4 * 3x}{3x^{-3}y^2}$

$\dfrac{24x^5y^8}{3x^{-3}y^2} = \boxed{8x^8y^6}$

Q6: $\dfrac{2y^3 3xy^3}{3x^2y^4} = \dfrac{6xy^6}{3x^2y^4} = \boxed{\dfrac{2y^2}{x}}$

Q7: $\dfrac{x^3y^3 * x^3}{4x^2}$

$\dfrac{x^6y^3}{4x^2} = \boxed{\dfrac{x^4y^3}{4}}$

Q8: $\dfrac{3x^2y^2}{2x^{-1} * 4yx^2} = \dfrac{3x^2y^2}{8x^1y^1} = \boxed{\dfrac{3xy}{8}}$

Q9: $\dfrac{x}{(2x^0)^2} = \boxed{\dfrac{x}{4}}$

Q10: $\dfrac{2m^{-4}}{(2m^{-4})^3} = \dfrac{2m^{-4}}{8m^{-12}} = \dfrac{2m^{12}}{8m^4}$

$= \boxed{\dfrac{m^8}{4}}$

Q11: $\dfrac{(2m^2)^{-1}}{m^2} = \dfrac{2^{-1}m^{-2}}{m^2}$

$= \boxed{\dfrac{1}{2m^4}}$

Q12: $\dfrac{2x^3}{(x^{-1})^3} = \dfrac{2x^3}{x^{-3}} = \boxed{2x^6}$

Q13: $(a^{-3}b^{-3})^0 = \boxed{1}$

Q14: $x^4 y^3 * (2y^2)^0 = x^4 y^3 * 1$

$= \boxed{x^4 y^3}$

Q15: $ba^4 * (2ba^4)^{-3} = ba^4 \cdot 2^{-3} b^{-3} a^{-12}$

$= \dfrac{ba^4}{2^3 b^3 a^{12}} = \boxed{\dfrac{1}{8a^8 b^3}}$

Q16: $(2x^0 y^2)^{-3} * 2yx^3 = 2^{-3} y^{-6} \cdot 2yx^3$

$= \dfrac{2x^3 y}{2^3 y^6} = \boxed{\dfrac{x^3}{4y^5}}$

Q17: $\dfrac{2k^3 * k^2}{k^{-3}} = \dfrac{2k^3 \cdot k^2 \cdot k^3}{1}$

$= \boxed{2k^8}$

Q18: $\dfrac{(x^{-3})^4 x^4}{2x^{-3}} = \dfrac{x^{-12} \cdot x^4}{2x^{-3}} = \dfrac{x^4 \cdot x^3}{2x^{12}}$

$= \dfrac{x^7}{2x^{12}} = \boxed{\dfrac{1}{2x^5}}$

Q19: $\dfrac{(2x)^{-4}}{x^{-1}*x} = \dfrac{2^{-4}x^{-4}}{x^{-1}\cdot x^{1}} = \dfrac{2^{-4}x^{-4}}{x^0}$

$= \dfrac{2^{-4}x^{-4}}{1} = \dfrac{1}{2^4 x^4} = \boxed{\dfrac{1}{16x^4}}$

Q20: $\dfrac{(2x^3z^2)^3}{x^3y^4z^2*x^{-4}z^3} = \dfrac{2^3x^9z^6}{x^{-1}y^4z^5}$

$= \boxed{\dfrac{8x^{10}z}{y^4}}$

Q21: $\dfrac{(2pm^{-1}q^0)^{-4}*2m^{-1}p^3}{2pq^2}$

$\dfrac{2^{-4}p^{-4}m^4 \cdot 2m^{-1}p^3}{2pq^2} = \dfrac{2^{-3}m^3p^{-1}}{2pq^2}$

$= \dfrac{m^3}{2^4p^2q^2} = \boxed{\dfrac{m^3}{16p^2q^2}}$

Q22: $\dfrac{(2hj^2k^{-2}*h^4j^{-1}k^4)^0}{2h^{-3}j^{-4}k^{-2}} = \dfrac{1}{2h^{-3}j^{-4}k^{-2}}$

$= \boxed{\dfrac{h^3j^4k^2}{2}}$

Q23: $(x^3)(x^7)$

$\boxed{x^{10}}$

Q24: $(3a^3)^2 = 3^2a^6 = \boxed{9a^6}$

Q25: $(2y)^2(2y^3) = 2^2y^2 \cdot 2y^3$

$= \boxed{8y^5}$

Q26: $(4^2)^2(4^5) = 4^4 \cdot 4^5 = \boxed{4^9}$

Q27: $\dfrac{2y^2}{y} = \boxed{2y}$

Q28: $\dfrac{2(4y^2)^2}{(2y^2)} = \dfrac{2\cdot(4^2y^4)}{2y^2} = \dfrac{32y^4}{2y^2}$

$= \boxed{16y^2}$

Q29: $(4^{-3})(2^4) = (2^2)^{-3} \cdot 2^4$

$$= 2^{-6} \cdot 2^4$$

$$= 2^{-2}$$

$$= \frac{1}{2^2} = \boxed{\frac{1}{4}}$$

Q30: $[(xy^{-2})^{-1}(x^3y^2)^{-3}] = x^{-1}y^2 \cdot x^{-9}y^{-6}$

$$= x^{-10}y^{-4}$$

$$= \boxed{\frac{1}{x^{10}y^4}}$$

Q31: $\dfrac{24(x^2y^3)^3}{18(x^{-3}y^4)^2} = \dfrac{24(x^6y^9)}{18(x^{-6}y^8)}$

$$= \frac{4x^6y^9x^6}{3y^8} = \boxed{\frac{4x^{12}y}{3}}$$

Q32: $\dfrac{x^2y^{-5}}{x^{-3}y^0} = \dfrac{x^2 \cdot x^3}{y^5 \cdot y^6} = \boxed{\dfrac{x^5}{y^5}}$

Q33: $\dfrac{-49x^5y^{-5}z^0}{-14x^7y^{-5}z^6} = \boxed{\dfrac{7}{2x^2z^6}}$

Q34: $\dfrac{7^0(2^3)}{(2)^{-3}(7)^{-2}} = \dfrac{2^3 \cdot 2^3 \cdot 7^2}{1}$

$$= \boxed{2^6 \cdot 7^2}$$

Q35: $(-3m^2n)^2(-2mn^2)^2$

$$= 9m^4n^2 \cdot 4m^2n^4$$

$$= \boxed{36m^6n^6}$$

Q36: $(4^n)(2^{2n}) = (2^2)^n \cdot (2^{2n})$

$$= 2^{2n} \cdot 2^{2n}$$

$$= 2^{2n+2n}$$

$$= \boxed{2^{4n}}$$

Q37: $(3^{x-y})^x$

$$= 3^{x(x-y)}$$

$$= \boxed{3^{x^2-xy}}$$

Q38: $\left(\dfrac{p^{-4}q^3r^3}{(2p^{-5}q^4r^{-7})^{-3}}\right)^0 = \boxed{1}$