

B block Homework

$$\begin{aligned} 1. \quad \frac{30x^{10}y^2z^{-4}}{(5x^5y^{-3}z^{-5})^{-2}} &= \frac{30x^{10}y^2z^{-4}}{5^{-2}x^{-10}y^6z^{10}} \\ &= \frac{30 \cdot 5^2 \cdot x^{10} \cdot x^{10} y^2}{y^6 z^{10} \cdot z^4} \\ &= \boxed{\frac{750x^{20}}{y^4z^{14}}} \end{aligned}$$

$$\begin{aligned} 2. \quad \frac{(3x^6y^{-3}z^7)^{-4}}{(7x^4y^{-2}z^5)^{-3}} &= \frac{(7x^4y^{-2}z^5)^3}{(3x^6y^{-3}z^7)^4} \\ &= \frac{7^3x^{12}y^{-6}z^{15}}{3^4x^{24}y^{-12}z^{28}} \\ &= \boxed{\frac{343y^6}{81x^{12}z^{13}}} \end{aligned}$$

$$3. \frac{-18x^{-9}y^7z^4}{-3x^2y^{-21}z^{-8}} = \frac{6y^7 \cdot y^{21} \cdot z^4 \cdot z^8}{x^2 \cdot x^9}$$

$$= \frac{6y^{28}z^{12}}{x^{11}}$$

$$4. \frac{(4a^2b^{-4})^{-3} \cdot a^4 \cdot (b^{-1})^{-2}}{a^6b^{-2} \cdot 5b^6} = \frac{4^{-3}a^{-6}b^{12} \cdot a^4b^2}{5a^6b^4}$$

$$= \frac{a^4b^{14}}{4^3 \cdot 5a^6 \cdot a^6 \cdot b^4}$$

$$= \frac{b^{10}}{320a^8}$$

$$5. \left[\frac{\left(\frac{27a^{10}b^{-4}}{13c^{-5}b^2} \right) \left(\frac{-(30)^{-9}x}{y^{-6}z^7} \right)^{167}}{\left(\frac{47d^{-7}e^5}{a^{-1}x^{-2}y^{-3}} \right)^{-85}} \right]^0 = 1$$

Anything to the zero power equals 1.