1

a) $(-2)^3 \cdot (-1)^3 \cdot (-4)^2 = (-2\cdot(-1))^3 \cdot (-4)^2 = 2^3 \cdot (-4)^2 = 2^3 \cdot (-2)^4 = 2^7 = \underline{128}$

b) $2a^3 - 3(-a)^5 + (-a)^3 + 2\cdot(a)^5 = 2a^3 + 3a^5 - a^3 - 2a^5 = \underline{a^5 + a^3}$

c) $(-x)^2 \cdot (-x)^4 + x^3 \cdot x^3 + 3(x^2)^3 - 5(-x)^6 = (-x)^6 + x^6 + 3x^6 - 5x^6 = 2x^6 + 3x^6 - 5x^6 = \underline{0}$

2

a) $\frac{8\cdot 32}{16\cdot 125} = \frac{2^3\cdot 2^5}{2^4\cdot 5^3} = \frac{2^8}{2^4\cdot 5^3} = \underline{\frac{2^4}{5^3}}$

b) $\frac{81\cdot 16}{27\cdot 64} = \frac{3^4\cdot 2^4}{3^3\cdot 2^6} = 3\cdot 2^{-2} = \frac{1}{2^2}\cdot 3 = \underline{\frac{3}{4}}$

3

a) $\frac{a^3\cdot b^3\cdot a^4\cdot b^5}{a\cdot b^3\cdot a^4\cdot b^2} \cdot \frac{1}{a^2\cdot b^2} = \frac{a\cdot b\cdot b^5}{a\cdot b^4\cdot b^2} = \frac{b^6}{b^6} = \underline{1}$ $\quad a\neq 0,\ b\neq 0$

b) $\left[16a^4\cdot\left(\frac{1}{a^2}\right)^3\cdot\left(\frac{a}{2}\right)^4\right]^3 = \left[16a^4\cdot\left(\frac{1}{a^6}\right)\cdot\left(\frac{a^4}{2^4}\right)\right]^3 = \left[2^4\cdot a^4\cdot a^{-6}\cdot\left(\frac{a^4}{2^4}\right)\right]^3 = \left[a^4\cdot a^{-6}\cdot a^4\right]^3 =$

$= (a^2)^3 = \underline{a^6}$ $\quad a\neq 0$

c) $\frac{2^5\cdot(2b^3x^3)^2}{2\cdot(2bx^2)^3} = \frac{2^5\cdot 4b^6x^6}{2\cdot 8b^3x^6} = \frac{2^5\cdot 2^2\cdot b^6x^6}{2\cdot 2^3\cdot b^3\cdot x^6} = \frac{2^7\cdot b^3}{2^4} = 2^3b^3 = \underline{(2b)^3}$ $\quad b\neq 0, x\neq 0$

d) $\left(\frac{x^0z^3}{y^3}\right)^{-4} = \left(\frac{1^{-4}z^{-12}}{y^{-12}}\right) = \frac{y^{12}}{z^{12}} = \underline{\left(\frac{y}{z}\right)^{12}}$ $\quad x\neq 0,\ y\neq 0,\ z\neq 0$

e) $2\cdot\left[\left(-\frac{x}{y}\right)^2\cdot\frac{y}{x}\right]^3 : \left(\frac{y}{x}\right)^4 = 2\cdot\left[\frac{x^2}{y^2}\cdot\frac{y}{x}\right]^3 : \frac{y^4}{x^4} = 2\cdot\frac{x^3}{y^3} : \frac{y^4}{x^4} = 2\cdot\frac{x^3}{y^3}\cdot\frac{x^4}{y^4} = \underline{2\cdot\frac{x^7}{y^7}}$

$y\neq 0,\ x\neq 0$

f) $\left[\left(\frac{z}{t}\right)^2\cdot\left(\frac{s}{t}\right)^3\cdot\frac{t^2}{s^2}\cdot\left(-\frac{2z}{s}\right)\right]^{-2} = \left[\frac{z^2}{s^2}\cdot\frac{s^3}{t^3}\cdot\frac{t^2}{s^2}\cdot\frac{-2z}{s}\right]^{-2} = \left(\frac{z}{s}\cdot\frac{-2z}{s}\right)^{-2} =$

$= \left(\frac{-2z^2}{s^2}\right)^{-2} = \underline{\frac{s^4}{4z^4}}$ $\quad s\neq 0,\ z\neq 0$

g) $\frac{(x-y)^3\cdot(x-y)^4}{(y-x)^5} : (x-y)^2 = \frac{(x-y)^7}{(y-x)^5}\cdot\frac{1}{(x-y)^2} = \frac{(x-y)^7}{-1\cdot(x-y)^7} = \underline{-1}$ $\quad x-y\neq 0 \Rightarrow x\neq y$

h) $\frac{(z-s)^2\cdot(s-z)^2}{z^2s^3}\cdot\frac{z^6s^3}{z-s} = (z-s)^2\cdot(-1)\cdot(z-s)^2\cdot\frac{z^4}{(z-s)} = \underline{(z-s)^3\cdot z^4}$

$z\neq 0,\ s\neq 0,\ z-s\neq 0 \Rightarrow z\neq s$