(4) $-3(ab^4)^3$

$-3(a^3b^{12})$

$-3a^3b^{12}$

(13) $(25a^2b)^3\left(\frac{1}{5}abf\right)^2$

$(25^2\ a^6b^3)\left(\left(\frac{1}{5}\right)^2a^2b^2f^2\right)$

$(15625a^6b^3)\left(\frac{1}{25}a^2b^2f^2\right)$

$625a^8b^5f^2$

7.2 Division Properties of Exponents

$(x^5)(x^4) = x^9$

$(x^5)^3 = x^{15}$

Quotient Power

To divide two powers with the same base, subtract the exponents.

$$\frac{x^7}{x^3} = x^4 \qquad \frac{x^5}{x^{11}} = \frac{1}{x^6}$$

$x^0 = 1$ $\quad 8^0 = 1$

$5^0 = 1$ $\quad y^0 = 1$

$$\frac{g^5 x^2}{g^2 x^8} = \frac{g^3}{x^6}$$

Negative exponents

$$x^{-3} = \frac{1}{x^3} \qquad \frac{2}{x^{-5}} = 2x^5$$

$$\frac{3x^{-2}y^4}{z^{-5}m^8} = \frac{3y^4z^5}{x^2m^8}$$

3 step approach to Simplify Monomials

1. Raise all powers to powers.
2. Get rid of all negative exponents.
3. Simplify

$$\left(\frac{3x^{-2}y^{3}}{5xy^{-1}}\right)^{-2}$$

$$\left(\frac{3^{-2}x^{4}y^{-6}}{5^{-2}x^{-2}y^{2}}\right) = \frac{5^{2}x^{4}x^{2}}{3^{2}y^{6}y^{2}}$$

$$= \frac{25x^{6}}{9y^{8}}$$

$$\frac{5r^{-3}t^{4}}{-20r^{2}t^{7}u^{-5}} = \frac{5t^{4}u^{5}}{-20r^{3}r^{2}t^{7}}$$

$$= -\frac{1u^{5}}{4t^{3}r^{5}}$$

$$\left(\frac{8}{9}\right)^{-1}$$

$$\frac{8^{-1}}{9^{-1}} = \frac{9}{8}$$

$$x^{-5}(x^3)(x^7)$$

$$\frac{x^3x^7}{x^5} = \frac{x^{10}}{x^5} = x^5$$