

Math Analysis

P.2 Exponents and Scientific Notation

$$a) \quad (-3x^4y^5)^3 = (-3)^3(x^4)^3(y^5)^3$$

$$\boxed{-27x^{12}y^{15}}$$

$$b) \quad (-7xy^4) \cdot (-2x^5y^6) = \boxed{14x^6y^{10}}$$

$$c) \quad \frac{-35x^2y^4}{5x^6y^{-8}} = \frac{-7y^4 \cdot y^8}{x^4} = \boxed{\frac{-7y^{12}}{x^4}}$$

$$d) \quad \left(\frac{4x^2}{y}\right)^{-3} = \frac{(4)^{-3}(x^2)^{-3}}{y^{-3}} = \frac{y^3}{4^3(x^2)^3} = \boxed{\frac{y^3}{64x^6}}$$

√ p+ 1

$$a) \quad (2x^3y^6)^4 = 2^4(x^3)^4(y^6)^4 = \boxed{16x^{12}y^{24}}$$

$$b) \quad (-6x^2y^5)(3xy^3) = \boxed{-18x^3y^8}$$

$$c) \quad \frac{100x^{12}y^2}{20x^{16}y^{-4}} = \frac{5y^2y^4}{x^4} = \boxed{\frac{5y^6}{x^4}}$$

$$d) \quad \left(\frac{5x}{y^4}\right)^{-2} = \frac{5^{-2}x^{-2}}{y^{-8}} = \frac{y^8}{5^2x^2} = \boxed{\frac{y^8}{25x^2}}$$

Scientific Notation

$$-6.2 \times 10^7 = -62,000,000$$

$$2.019 \times 10^{-3} = .002019$$

$$\underset{\uparrow}{34},970,000,000,000 = 3.497 \times 10^{13}$$

$$-.000000000802 = -8.02 \times 10^{-11}$$

$$312 \text{ million} = 3.12 \times 10^8$$

$$\underset{\uparrow}{3}12,000,000$$

$$(\underline{6.1} \times 10^5)(\underline{4} \times 10^{-9}) \quad \overset{6.1 \times 4}{\underline{24.4}} \times 10^{5 \cdot 10^{-9}}$$

$$2.44 \times 10^{-3}$$

$$\frac{1.8 \times 10^4}{3 \times 10^{-2}} = \frac{1.8}{3} \times \frac{10^4}{10^{-2}}$$

$$.6 \times 10^{4-(-2)}$$

$$.6 \times 10^6$$

$$\underline{6 \times 10^5}$$

Ex 6 pg 27

Nat debt \$1.52 trillion

$$1.52 \times 10^{13}$$

$$15.2 \times 10^{12}$$

US Pop 312,000,000

$$312 \times 10^6$$

$$3.12 \times 10^8$$

$$\frac{\text{Nat Debt}}{\text{US Pop}}$$

$$\frac{1.52 \times 10^{13}}{3.12 \times 10^8}$$

$$= \$48,717.95$$

$$4.8717 \times 10^3$$

Ex 7 p 28

$$R_s = \frac{2GM}{c^2}$$

$$R_s = \frac{2(6.7 \times 10^{-11})(2 \times 10^{30})}{(3 \times 10^8)^2}$$

$$= 2977.7$$

$$\boxed{2978 \text{ m}}$$

pg 30; 40-72e, 78-84e,
92-98e, 108-116e, 120