

ASSIGNMENT #1  
 943-DW  
 SOLUTIONS

8th Edition Exercises

P. 20

5.  $x^3 x^4 = x^7$

6.  $y^2 y^7 = y^9$

7.  $2b^4 b^2 = 2b^6$

8.  $3K(K^5) = 3K^6$

9.  $\frac{m^5}{m^3} = m^2$

10.  $\frac{x^6}{x} = x^5$

11.  $\frac{n^5}{n^9} = \frac{1}{n^4}$

12.  $\frac{s}{s^4} = \frac{1}{s^3}$

13.  $(p^2)^4 = p^8$

14.  $(x^8)^3 = x^{24}$

17.  $(2n)^3 = 8n^3$

18.  $(ax)^5 = a^5 x^5$

21.  $\left(\frac{2}{b}\right)^3 = \frac{8}{b^3}$

22.  $\left(\frac{F}{t}\right)^{20} = \frac{F^{20}}{t^{20}}$

23.  $\left(\frac{x^2}{2}\right)^4 = \frac{x^8}{16}$

24.  $\left(\frac{3}{n^3}\right)^3 = \frac{27}{n^9}$

26.  $(8a)^0 = 1$

27.  $-3x^0 = -3$

28.  $6v^0 = 6$

29.  $6^{-1} = \frac{1}{6}$

30.  $-w^{-5} = -\frac{1}{w^5}$

31.  $\frac{1}{R^{-2}} = R^2$

32.  $(-t^2)^7 = -t^{14}$

33.  $\frac{1}{t^{-48}} = t^{48}$

34.  $(-y^3)^5 = -y^{15}$

35.  $(2x^2)^6 = 64x^{12}$

36.  $-(-c^4)^4 = -c^{16}$

40.  $2i^{40} i^{-70} = 2i^{-30} = \frac{2}{i^{30}}$

41.  $\frac{2v^4}{(2v)^4} = \frac{2v^4}{16v^4} = \frac{1}{8}$

42.  $\frac{x^2 x^3}{(x^2)^3} = \frac{x^5}{x^6} = \frac{1}{x}$

43.  $\frac{(n^2)^4}{(n^4)^2} = \frac{n^8}{n^8} = 1$

44.  $\frac{(3t)^{-1}}{3t^0} = \frac{1}{(3t)^3} = \frac{1}{9t}$

45.  $(5^0 x^2 a^{-1})^{-1} = \frac{1}{5^0 x^2 a^{-1}} = \frac{a}{x^2}$

46.  $(3m^{-2} n^4)^{-2} = 3^{-2} m^4 n^{-8} = \frac{m^4}{3^2 n^8}$

47.  $\left(\frac{4x^{-1}}{a^{-1}}\right)^{-3}$

$= \frac{4^{-3} x^3}{a^3} = \frac{x^3}{4^3 a^3}$

48.  $\left(\frac{2b^2}{y^5}\right)^{-2} = \frac{2^{-2} b^{-4}}{y^{-10}} = \frac{y^{10}}{4b^4}$

50.  $ax^2(-a^2x)^2$   
 $= ax^2 a^4 x^2$   
 $= a^5 x^4$

51.  $\frac{15n^2 T^5}{3nT^6} = \frac{5n}{T}$

52.  $\frac{(nRT^{-2})^{32}}{R^{-2} T^{32}} = \frac{n^{32} R^{32} T^{-64}}{R^{-2} T^{32}}$   
 $= \frac{n^{32} R^{34}}{T^{96}}$

## BONUS IN-CLASS EXERCISES

$$\begin{aligned}
 (1) \quad \frac{(2a^{-2}b)^3 \left(\frac{a}{2b^2}\right)^{-2}}{2^3 a^2 b \left(\frac{ba^2}{(2^2 a)^{-1} b^3}\right)^2} &= \frac{(2^3 a^{-6} b^3) (a 2^{-1} b^{-2})^{-2}}{(2^3 a^2 b) (ba^2 (2^2 a) b^{-3})^2} \\
 &= \frac{(2^3 a^{-6} b^3) (a^{-2} 2^2 b^4)}{(2^3 a^2 b) (b^2 a^4 2^4 a^2 b^{-6})} \\
 &= \frac{2^5 a^{-8} b^7}{2^7 a^8 b^{-3}} = \frac{b^{10}}{2^2 a^{16}}
 \end{aligned}$$

$$\begin{aligned}
 (2) \quad \frac{[(5^2 x)^2 y]^3 [(5x)^{-1} y^2]^{-2}}{\left(\frac{x^2 y^{-1}}{(5x)^3}\right)^2 5y^3 \left(\frac{x^2}{y^3}\right)^{-1}} \\
 &= \frac{[5^4 x^2 y]^3 [(5x)^2 y^{-4}]}{\left(\frac{x^4 y^{-2}}{(5x)^6}\right) 5y^3 \left(\frac{x^{-2}}{y^{-3}}\right)} \\
 &= \frac{[5^{12} x^6 y^3] [5^2 x^2 y^{-4}]}{[x^4 y^{-2} (5x)^{-6}] 5y^3 [x^{-2} y^3]} \\
 &= \frac{[5^{14} x^8 y^{-1}]}{[x^4 y^{-2} 5^{-6} x^{-6}] 5y^3 [x^{-2} y^3]} \\
 &= \frac{5^{14} x^8 y^{-1}}{5^{-5} x^{-4} y^4} \\
 &= \frac{5^{19} x^{12}}{y^5}
 \end{aligned}$$