HW Review - p. 492

(48) $-(-1xy^2z^3)^5(x^4yz)^2$

$-(-1^5x^5y^{10}z^{15})(x^8y^2z^2)$

$-(-1^5x^{13}y^{12}z^{17})$

$-(-1x^{13}y^{12}z^{17})$

$x^{13}y^{12}z^{17}$

$\frac{-1\cdot-1}{1}\cdot\frac{-1\cdot-1}{1}\cdot-1$

$1\cdot-1=-1$

(45) $(3a^3)^? \cdot 2a^3 = 18a^9$

$(3a^3)^2 \cdot 2a^3 = 18a^9$

$3^2 a^6 \cdot 2a^3 = 18a^9$

$9a^6 \cdot 2a^3 = 18a^9$

$18a^9 = 18a^9$

$3x + 3 = 9$

$3x = 6$

$x = 2$

(33) $6d^2 \cdot (2d^5)^4$

$6d^2 \cdot 2^4 d^{20}$

$6d^2 \cdot 16d^{20} = 96d^{22}$

Quotient of Powers Property

$$\frac{a^m}{a^n} = a^{(m-n)}$$

$$\frac{5^4}{5^2} = 5^{(4-2)} = 5^2$$

$$\frac{\cancel{5}\cdot\cancel{5}\cdot 5\cdot 5}{\cancel{5}\cdot\cancel{5}} = 5^2$$

Power of a Quotient Property

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

$$\left(\frac{5}{3}\right)^5 = \frac{5^5}{3^5}$$

$$\frac{5}{3}\cdot\frac{5}{3}\cdot\frac{5}{3}\cdot\frac{5}{3}\cdot\frac{5}{3} =$$

$$\frac{5\cdot5\cdot5\cdot5\cdot5}{3\cdot3\cdot3\cdot3\cdot3} = \frac{5^5}{3^5}$$

$$\left(\frac{5^2}{3^3}\right)^5 = \frac{(5^2)^5}{(3^3)^5} = \frac{5^{10}}{3^{15}}$$

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

$$= \frac{4^3 (x^2)^3}{5^3 y^3}$$

$4 \cdot 4 \cdot 4$

$16 \cdot 4$

64

$$= \frac{4^3 x^6}{5^3 y^3} = \frac{64x^6}{125y^3}$$

$$\left(\frac{a^2}{b}\right)^5 \cdot \frac{1}{2a^2} = \frac{(a^2)^5}{b^5} \cdot \frac{1}{2a^2}$$

$$= \frac{a^{10}}{b^5} \cdot \frac{1}{2a^2} = \frac{a^{10}}{2a^2b^5}$$

$$= \frac{a^8}{2b^5}$$

Simplify the expression.

10. $\frac{1}{y^9} \cdot y^{15}$

11. $z^{16} \cdot \frac{1}{z^7}$

12. $\left(\frac{a}{b}\right)^8$

13. $\left(-\frac{6}{z}\right)^3$

14. $\left(\frac{a^3}{2b^5}\right)^4$

15. $\left(\frac{3x^4}{y^6}\right)^5$

16. $\left(\frac{m^4}{5n^9}\right)^3$

17. $\left(\frac{3x^7}{2y^{12}}\right)^4$

18. $\left(\frac{2m^5}{3n^9}\right)^5$

(10) $\frac{1}{y^9} \cdot \frac{y^{15}}{1} = \frac{y^{15}}{y^9} = \boxed{y^6}$

(11) $\frac{z^{16}}{1} \cdot \frac{1}{z^7} = \frac{z^{16}}{z^7} = \boxed{z^9}$

(12) $\left(\frac{a}{b}\right)^8 = \frac{a^8}{b^8}$

Simplify the expression.

10. $\frac{1}{y^9} \cdot y^{15}$

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(13) $\left(-\frac{6}{z}\right)^3 = \left(\frac{(-1)6}{z}\right)^3 = \frac{(-1\cdot 6)^3}{z^3} = \frac{-1^3 \cdot 6^3}{z^3}$

$\frac{-216}{z^3}$

(14) $\left(\frac{a^3}{2b^5}\right)^4 = \frac{(a^3)^4}{(2b^5)^4} = \frac{a^{12}}{2^4(b^5)^4} = \frac{a^{12}}{16b^{20}}$

(15) $\frac{(3x^4)^5}{(y^6)^5} = \frac{3^5(x^4)^5}{y^{30}} = \frac{243x^{20}}{y^{30}}$

Homework:

p. 498 3-45, 52, 53