

4.2

45. $2y + z = 7$
 $2x - z = 3$
 $(x - y = 3) \cdot 2$

$2x - 2y = 6$
 $2x + 2y = 10$

 $4x = 16$
 $x = 4$

$2y + z = 7$
 $2x - z = 3$

 $2x + 2y = 10$

$2(4) - z = 3$
 $8 - 3 = z$
 $z = 5$

$4 - y = 3$
 $-y = -1$
 $y = 1$

$(4, 1, 5)$

Sep 20-11:05 AM

43. $x - 2y + z = 6$
 $x + 3y + z = 16$
 $3x - y - z = 12$

$6 - 2(2) + z = 6$
 $z = 4$

$(6, 2, 4)$

$1+3$
 $4x - 3y = 18$

$2+3$
 $4x + 2y = 28$

$4x - 3(2) = 18$
 $4x = 24$
 $x = 6$

$(-1) \Rightarrow -4x + 3y = -18$

 $5y = 10$
 $y = 2$

Sep 20-11:35 AM

5.1 Exponential Expressions

$$x^n = \underbrace{x \cdot x \cdot x \cdots x \cdot 1}_{n \text{ times}}$$

For $m, n, p \in \mathbb{Z}$ (integers),

$$x^m x^n = x^{m+n}$$

$$\left(\frac{x^m}{y^n}\right)^p = \frac{x^{mp}}{y^{np}}, y \neq 0$$

$$\frac{x^m}{x^n} = x^{m-n} = \frac{1}{x^{n-m}}$$

$$x^0 = 1, x \neq 0$$

$$(x^m)^n = x^{mn}$$

$$x^{-n} = \frac{1}{x^n}, x \neq 0$$

$$(x^m y^n)^p = (x^m)^p (y^n)^p = x^{mp} y^{np}$$

$$\frac{1}{x^{-n}} = x^n, x \neq 0$$

Sep 20-10:47 AM

A simplified exponential expression contains:

- only one instance of each variable
- no negative exponents

$$x^m x^n = x^{m+n}$$

$$4. (-2ab^4)(-3a^2b^4) = (-2)(-3)a^1a^2b^4b^4 = \boxed{6a^3b^8}$$

$$(x^m)^n = x^{mn}$$

$$20. [(3x^2y^3)^2]^2 = (9x^4y^6)^2 = \boxed{81x^8y^{12}}$$

Sep 20-11:05 AM

$$\begin{aligned}
 66. \quad \frac{6^2 a^{-2} b^3}{3ab^4} &= \frac{36}{3} \cdot \frac{a^{-2}}{a^1} \cdot \frac{b^3}{b^4} = \\
 &= 12 \cdot \frac{1}{a^{1-(-2)}} \cdot \frac{1}{b^{4-3}} = \\
 &= \boxed{\frac{12}{a^3 b}}
 \end{aligned}$$

Sep 20-11:12 AM

$$\begin{aligned}
 72. \quad \left(\frac{x^{-3} y^{-4}}{x^{-2} y^1} \right)^{-2} &= \left(\frac{1}{x^{-2-(-3)} y^{1-(-4)}} \right)^{-2} \\
 &= \left(\frac{1}{x y^5} \right)^{-2} = \frac{1}{x^{-2} y^{-10}} = \boxed{x^2 y^{10}} \\
 &\rightarrow \frac{x^6 y^8}{x^4 y^{-2}} = \boxed{x^2 y^{10}}
 \end{aligned}$$

Sep 20-11:14 AM

$$80. \left(\frac{4^{-2} x^1 y^{-3}}{x^{-3} y^1} \right)^3 \left(\frac{8^{-1} x^{-2} y}{x^4 y^{-1}} \right)^{-2} =$$

$$= \left(\frac{x^4}{16 y^7} \right)^3 \left(\frac{y^2}{8 x^6} \right)^{-2}$$

$$= \frac{x^{12}}{2^{12} y^{12}} \cdot \frac{y^{-4}}{2^{-6} x^{-12}}$$

$$= \frac{x^{24}}{2^6 y^{16}} = \frac{x^{24}}{64 y^{16}}$$

$$\frac{x^m}{x^n} = \frac{x^{m-n}}{1}$$

$$= \frac{1}{x^{n-m}}$$

Sep 20-11:15 AM

Homework: Section 5.1 #63-85 odd

Quiz tomorrow on exponent rules (p. 257 in your book)

Sep 20-11:18 AM