4.2

19. $\begin{bmatrix} 4 & 4 & 5 \\ 2 & -8 & -5 \end{bmatrix}$ interchange $R2 \cdot \frac{1}{2}$ $\begin{bmatrix} 1 & -4 & -5/2 \\ 4 & 4 & 5 \end{bmatrix}$

$R2 - 4R1$ $\begin{bmatrix} 1 & -4 & -5/2 \\ 0 & 20 & 15 \end{bmatrix} \to \begin{bmatrix} 1 & -4 & -5/2 \\ 0 & 1 & 3/4 \end{bmatrix}$

$5 - \frac{2}{4}(-5/2)$ $-5/2 + 4(3/4)$

$R_1 + 4R2$ $\begin{bmatrix} 1 & 0 & 1/2 \\ 0 & 1 & 3/4 \end{bmatrix}$ $(1/2, 3/4)$

Sep 20-10:00 AM

$\begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$ $R1 \cdot \frac{1}{a}$ $\begin{bmatrix} 1 & b/a & c/a \\ d & e & f \end{bmatrix}$

$R2 - d \cdot R1$ $\begin{bmatrix} 1 & b/a & c/a \\ 0 & e - \frac{db}{a} & f - \frac{dc}{a} \end{bmatrix}$ $R2 \cdot \frac{1}{e - \frac{db}{a}}$

$\begin{bmatrix} 1 & b/a & c/a \\ 0 & 1 & \frac{f - \frac{dc}{a}}{e - \frac{db}{a}} \end{bmatrix}$ $R1 - \frac{b}{a}R2$ $= \begin{bmatrix} 1 & 0 & \frac{c}{a} - \frac{b}{a}\left(\frac{f - \frac{dc}{a}}{e - \frac{db}{a}}\right) \\ 0 & 1 & \frac{f - \frac{dc}{a}}{e - \frac{db}{a}} \end{bmatrix}$

Sep 20-10:06 AM

45. $\begin{cases} 2y+z=7 \\ 2x-z=3 \\ x-y=3 \end{cases}$

$2\cdot$

$2y+z=7$

$2x-z=3$

$2x+2y=10$

$2x-2y=6$

$2x+2y=10$

$4x=16$

$x=4$

$4-y=3$

$-y=-1$

$y=1$

$2(1)+z=7$

$z=5$

$(4,1,5)$

Sep 20-10:10 AM

5.1 Exponential Expressions

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

$m,n,p \in \mathbb{Z}$

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

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

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

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

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

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

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

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

Sep 20-10:13 AM

Simplify

- one instance of each variable
- no negative exponents

4. $(-2ab^4)(-3a^2b^4) = (-2)(-3)aa^2b^4b^4$

$= \boxed{6a^3b^8}$

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

Sep 20-10:21 AM

66. $\dfrac{6^2a^{-2}b^3}{3ab^4} = \dfrac{36}{3} \cdot \dfrac{a^{-2}}{a^1} \cdot \dfrac{b^3}{b^4}$

$\boxed{\dfrac{x^m}{x^n} = \dfrac{x^{m-n}}{1} = \dfrac{1}{x^{n-m}}}$

$= \dfrac{12}{1} \cdot \dfrac{1}{a^{1-(-2)}} \cdot \dfrac{1}{b^{4-3}}$

$= \boxed{\dfrac{12}{a^3b}}$

Sep 20-10:25 AM

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

$= \left(\frac{1}{xy^{5}}\right)^{-2} = \frac{1}{x^{-2}y^{-10}} = \boxed{x^{2}y^{10}}$

$\frac{x^{6}y^{8}}{x^{4}y^{-2}} = x^{2}y^{10}$

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

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

Sep 20-10:28 AM

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

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

2^{4} 2^{3}

$= \frac{x^{12}}{2^{12}y^{12}} \cdot \frac{y^{-4}}{2^{-6}x^{-12}} = \frac{x^{24}}{2^{6}y^{16}} = \frac{x^{24}}{64y^{16}}$

5.1

#63-85 odd

quiz on rules (p257)

Sep 20-10:32 AM