Algebra I Monday 2-25-13 Class Notes

(Ex) $x^{\frac{1}{2}} = \sqrt[2]{x^1}$ or $\left(\sqrt[2]{x}\right)$

FER #7 $a^{\frac{N}{m}} = \sqrt[m]{a^N}$ or $\left(\sqrt[m]{a}\right)^N$

MR $a^m \cdot a^N = a^{m+N}$

DR $\frac{a^m}{a^N} = a^{m-N}$

→ ZER $\frac{a^m}{a^m} = 1 = a^0$

Exc. $0^0 = 0$

NER $a^{-N} = \frac{1}{a^N}$ or

$\frac{1}{a^{-N}} = a^N$

PPR $(a^m)^N = a^{m \cdot N}$

GPR $\left(\frac{a}{c}\frac{b}{d}\right)^N = \frac{a^N b^N}{c^N d^N}$

ANSWER

$$\frac{a^4}{a^7} = \frac{aaaa}{aaaaaaa} = \frac{1}{a^3}$$

$$a^{4-7} = a^{-3} = \frac{1}{a^3}$$

$$\frac{1}{a^{-3}} = \frac{1}{\frac{1}{a^3}} = 1 \cdot \frac{a^3}{1} = a^3$$

(49) $\dfrac{(-2N)^{1} \cdot 2N}{(-N)^{-1}} = 2N(-N)'$

$= 2N \cdot -N$

$= \boxed{-2N^2}$

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(51) $-\dfrac{X^3 \cdot X^2}{(-X^{-3})^{-4}} = -\dfrac{X^5}{(-X)^{12}}$

$= +\dfrac{X^5}{X^{12}} = -X^{-7}$

$= \boxed{-\dfrac{1}{X^7}}$

(90) $$\frac{K^{\frac{3}{2}}}{\left(K^{\frac{1}{3}}\right)^{\frac{5}{3}}\left(K^{\frac{1}{2}}\right)^{\frac{2}{3}}}$$

$$\frac{K^{\frac{3}{2}}}{K^{\frac{5}{9}}\,K^{\frac{1}{3}}} = \frac{K^{\frac{3}{2}}}{K^{\frac{5}{9}}\,K^{\frac{3}{9}}}$$

$$= \frac{K^{\frac{3}{2}}}{K^{\frac{8}{9}}}$$

$$= K^{\frac{3}{2}-\frac{8}{9}}$$

$$= K^{\frac{27}{18}-\frac{16}{18}}$$

$$= K$$

$$= \boxed{K^{\frac{11}{18}}}$$ ✓

(92) $\dfrac{(x^3)^{\frac{2}{3}}}{x^{\frac{1}{3}} \cdot x} = \dfrac{x^{\frac{1}{6}}}{x^{\frac{1}{3}} \cdot x^{\frac{1}{3}}}$

$= \dfrac{x^2}{x^{\frac{1}{3}}}$

$= \dfrac{x^{\frac{12}{6}}}{x^{\frac{16}{6}}}$

$= x^{\frac{12-16}{6}} = x^{-\frac{4}{6}} = x^{-\frac{2}{3}}$

$= \dfrac{1}{x^{\frac{1}{3}}} \cdot \dfrac{x^{\frac{1}{3}}}{x^{\frac{1}{3}}} = \boxed{\dfrac{x^{\frac{1}{3}}}{x}}$