

4B **#2**

(a) $2^{-3} = \frac{1}{8}$ (b) $32^{-2/5} = \frac{1}{4}$

(c) $81^{-1/4} = \frac{1}{3}$ (d) $(2^3)^{-4/3} = \frac{1}{16}$

(e) $\left(\frac{64}{125}\right)^{-2/3} = \left(\frac{4}{5}\right)^{-2} = \frac{25}{16}$

4C **#2**

(a) $\frac{a^{3/2}}{b^3} \cdot \frac{b^2}{a^{-1}} = \frac{a^{5/2}}{b}$

(b) $\sqrt{\frac{x^{-2}y^2}{25x^4}} = \sqrt{\frac{y^2}{25x^6}} = \frac{y}{5x^3}$

(c) $\frac{6x^2y^{-2}}{\sqrt[3]{8x^{-3}}} = \frac{6x^2y^{-2}}{2x^{-1}} = \frac{3x^3}{y^2}$

$(x^6)^{1/2}$

49 #2

$$(a) \log_3 \frac{1}{81} = \log_3 3^{-4} = -4$$

$$(b) \log_5 125^{1/2} = \log_5 (5^3)^{1/2}$$

$$= \log_5 5^{3/2} = \frac{3}{2}$$

$$(c) \log_{32} 8 = \boxed{\frac{3}{5}}$$

$$5 \square = 3$$

$$32^{\square} = 8$$

$$(2^5)^{\square} = 2^3$$

$$2^{5\square} = 2^3$$

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

$$\textcircled{a} \log_3 \underline{3^4} = \boxed{4}$$

$$3^{\square} = 3^4$$

HW quiz 11-1-18

$$\textcircled{1} \sqrt[3]{27a^6}$$

$$\textcircled{2} \left(\frac{9v^2}{16w^4} \right)^{-\frac{1}{2}}$$

$$\textcircled{3} \log_8 2$$

Exponential Equations

(variable in the exponent)

$$x^2 = 9$$

not exponential

$$x = \pm 3$$

$$2^x = 9$$

Exponential

Log rule #3

$$\log a^b = b \cdot \log a$$

$$2^x = 9$$
$$\ln 2^{\otimes x} = \ln 9$$

$$\frac{x \cdot \cancel{\ln 2}}{\cancel{\ln 2}} = \frac{\ln 9}{\ln 2}$$

$$x = \frac{\ln 9}{\ln 2}$$

$$\frac{5x}{5} = \frac{12}{5}$$

$$\text{Ex. } 3^x = 2^{x+5}$$

log rule #3

$$\ln 3^x = \ln 2^{x+5}$$
$$x \cdot \ln 3 = (x+5) \ln 2$$

$$x \cdot \ln 3 = \cancel{x \cdot \ln 2} + 5 \cdot \ln 2$$
$$-x \cdot \ln 2 \quad \quad \quad -x \cdot \ln 2$$

$$x \cdot \ln 3 - \cancel{x \cdot \ln 2} = 5 \cdot \ln 2$$

$$\frac{x (\cancel{\ln 3 - \ln 2})}{\cancel{\ln 3 - \ln 2}} = \frac{5 \cdot \ln 2}{\ln 3 - \ln 2}$$

$$x = \frac{5 \cdot \ln 2}{\ln 3 - \ln 2}$$

$$\text{Ex. } 5^{x-2} = 8^{x+1}$$

$$\ln 5^{x-2} = \ln 8^{x+1}$$

$$(x-2) \cdot \ln 5 = (x+1) \cdot \ln 8$$

$$x \cdot \ln 5 - 2 \cdot \ln 5 = x \cdot \ln 8 + \ln 8$$

$$-x \cdot \ln 8 \quad -x \cdot \ln 8$$

$$x \ln 5 - x \ln 8 - 2 \ln 5 = \ln 8$$

$$+ 2 \ln 5 \quad + 2 \ln 5$$

$$x \ln 5 - x \ln 8 = \ln 8 + 2 \ln 5$$

$$x (\ln 5 - \ln 8) = \ln 8 + 2 \cdot \ln 5$$

$$\frac{\ln 5 - \ln 8}{\ln 5 - \ln 8} = \frac{\ln 8 + 2 \cdot \ln 5}{\ln 5 - \ln 8}$$

$$x = \frac{\ln 8 + 2 \cdot \ln 5}{\ln 5 - \ln 8}$$

HW

[7] h [8] a-d

[~~12~~] e g i