

$$\textcircled{1} \quad 4^{-1} = \frac{1}{4}$$

$$\textcircled{2} \quad 4^{-2} = \frac{1}{16}$$

$$\textcircled{3} \quad 4^{-3} = \frac{1}{64}$$

$$\textcircled{4} \quad 4^0 = 1$$

$$\textcircled{5} \quad \left(\frac{3}{5}\right)^{-1} = \frac{5}{3}$$

-1 power \rightarrow take a reciprocal

$$\textcircled{6} \quad \left(\frac{3}{5}\right)^{-2} = \left(\frac{5}{3}\right)^2$$

$$= \frac{25}{9}$$

$$\textcircled{7} \quad \left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$$

$$\textcircled{8} \quad \left(\frac{2}{3}\right)^0 = 1$$

$$\textcircled{9} \quad 100^{1/2} = 10$$

$$\textcircled{10} \quad 100^{3/2} = 10^3 = 1000$$

$\frac{1}{2}$ power \rightarrow take a square root

$$100^{3/2} = \left(100^{1/2}\right)^3$$

$$= \left(100^3\right)^{1/2}$$

$$= 1,000,000^{1/2} = 1000$$

1000000

$$(a^m)^n = a^{m \cdot n}$$

$$(11) 100^{-1/2} = (100^{1/2})^{-1} = 10^{-1} = \frac{1}{10}$$

$$(12) 100^{-3/2} = (100^{1/2})^{-3} = 10^{-3} = \frac{1}{1000}$$

$$(13) 125^{1/3} = \sqrt[3]{125} = 5$$

$$(14) 125^{2/3} = (125^{1/3})^2 = 5^2 = 25$$

$$(15) 125^{-1/3} = 5^{-1} = \frac{1}{5}$$

$$(16) 125^{-2/3} = (125^{1/3})^{-2} = 5^{-2} = \frac{1}{25}$$

$$(17) \left(\frac{1}{25}\right)^{1/2} = \frac{\sqrt{1}}{\sqrt{25}} = \frac{1}{5}$$

$$(18) \left(\frac{1}{25}\right)^{-1/2} = \left(\frac{1}{5}\right)^{-1} = 5$$

$$(19) \left(\frac{1}{25}\right)^{3/2} = \left(\left(\frac{1}{25}\right)^{1/2}\right)^3 = \left(\frac{1}{5}\right)^3 = \frac{1}{125}$$

$$(20) \left(\frac{1}{25}\right)^{-3/2} = \left(\left(\frac{1}{25}\right)^{1/2}\right)^{-3} = \left(\frac{1}{5}\right)^{-3} = 125$$

$$(21) \left(\frac{1}{27}\right)^{1/3} = \frac{1}{3}$$

$$(22) \left(\frac{1}{27}\right)^{-2/3} = \left(\frac{1}{3}\right)^{-2} = 9$$

$$(23) \left(\frac{1}{27}\right)^{4/3} = \left(\frac{1}{3}\right)^4 = \frac{1}{81}$$

$$(24) \left(\frac{1}{27}\right)^{-4/3} = \left(\frac{1}{3}\right)^{-4} = 81$$

$$(25) \left(\frac{9}{64}\right)^{1/2} = \frac{3}{8}$$

$$\begin{array}{r} 3 \\ 64 \\ 8 \\ \hline 512 \end{array}$$

$$(26) \left(\frac{9}{64}\right)^{-3/2} = \left(\frac{3}{8}\right)^{-3} = \left(\frac{27}{512}\right)^{-1} = \frac{512}{27}$$

$$(27) \left(\frac{16}{81}\right)^{3/4} = \left(\frac{2}{3}\right)^3 = \frac{8}{27}$$

$$(28) \left(\frac{16}{81}\right)^{-3/4} = \left(\frac{2}{3}\right)^{-3} = \frac{27}{8}$$

Logarithms

#1

(a) 1 (b) $\frac{1}{9}$ (c) 3 (d) 27 (e) 81

(f) $\frac{1}{81}$ (g) $\frac{1}{3}$ (h) $\frac{1}{27}$ (i) $\frac{1}{3}$ (j) 3

(k) $\frac{1}{27}$ (l) 27 (m) 1 (n) $\frac{1}{8}$ (o) $\frac{1}{64}$

(p) 2 (q) 64 (r) 4 (s) $\frac{1}{2}$ (t) $\frac{1}{4}$

(u) $\frac{1}{2}$ (v) $\frac{1}{64}$ (w) 64 (x) $\frac{1}{4}$ (y) 2 ←
 $(\frac{1}{8})^{-1/3} = ((\frac{1}{8})^{1/3})^{-1} = (\frac{1}{2})^{-1}$

Classwork Quiz 10-18

(1) $4^{1/2}$

(3) $(\frac{1}{4})^{-1/2}$

(2) $4^{5/2}$

(4) $(\frac{1}{4})^{3/2}$