

(27) 指數總複習

指數定律的複習

指數第一定律 $a^m a^n = a^{m+n}$

指數第二定律 $\frac{a^m}{a^n} = a^{m-n}$

指數第三定律 $a^0 = 1$

指數第四定律 $a^{-n} = \frac{1}{a^n}$

指數第五定律 $(a^n)(b^n) = (ab)^n$

例子的複習

$$(1) \frac{3^{100}}{3^{98}} = 3^{100-98} = 3^2 = 9$$

$$(2) (2^{100})^0 = 1$$

$$(3) 3^{-1} = \frac{1}{3}$$

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

$$(5) (2^3)(5^3) = (10)^3 = 1000$$

$$(6) (2^3)(2^4) = 2^{3+4} = 2^7 = (2^4)(2^3) = 16 \times 8 = 128$$

$$(7) 2^{-3} = \frac{1}{2^3} = \frac{1}{8}$$

$$(8) (-1)^{-1} = \frac{1}{-1} = -1$$

$$(9) (-2)^2 = 4$$

$$(10) (-2)^3 = -8$$

$$(11) 2^5 = (2^3)(2^2) = 8 \times 4 = 32$$

$$(12) (2^3 + 3^2)^{-1} = \frac{1}{2^3+3^2} = \frac{1}{8+9} = \frac{1}{17}$$

$$(13) 10^{-3} = \frac{1}{10^3} = \frac{1}{1000}$$

$$(14) \left(\frac{3}{2}\right)^{-1} \left(\frac{4}{3}\right)^{-1} = \left(\left(\frac{3}{2}\right)\left(\frac{4}{3}\right)\right)^{-1} = 2^{-1} = \frac{1}{2}$$

$$(15) \left(\frac{2}{3}\right)^2 \left(\frac{1}{4}\right)^2 = \left(\left(\frac{2}{3}\right)\left(\frac{1}{4}\right)\right)^2 = \left(\frac{1}{6}\right)^2 = \frac{1}{36}$$

$$(16) (17156 + 21914)^0 = 1$$

$$(17) \left(\frac{2}{3}\right)^{-2} = \frac{1}{\left(\frac{2}{3}\right)^2} = \frac{1}{\frac{4}{9}} = \frac{9}{4}$$

$$(18) (3^5)(3^{-2}) = 3^{5-2} = 3^3 = 27$$

$$(19) (2)^{-2}(3)^{-2} = (2 \times 3)^{-2} = 6^{-2} = \frac{1}{6^2} = \frac{1}{36}$$

$$(20) (3)^2(3)^{-2} = (3)^{2-2} = 3^0 = 1$$

$$(21) \left(\frac{1}{2}\right)^2 \left(-\frac{2}{3}\right)^2 = \left(\frac{1}{2} \times \frac{-2}{3}\right)^2 = \left(\frac{-1}{3}\right)^2 = \frac{1}{9}$$

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

$$(23) (3)^2(4)^2 = (3 \times 4)^2 = 12^2 = 144$$

$$(24) (3^2 + 2^1)^{-1} = (9 + 2)^{-1} = 11^{-1} = \frac{1}{11^1} = \frac{1}{11}$$

$$(25) 2^{-1} + 3^{-1} = \frac{1}{2} + \frac{1}{3} = \frac{3+2}{6} = \frac{5}{6}$$

$$(26) (3^{-3})(2^{-3}) = (3 \times 2)^{-3} = 6^{-3} = \frac{1}{6^3} = \frac{1}{216}$$

$$(27) (2^{-1})(3^{-2}) = \frac{1}{2} \times \frac{1}{3^2} = \frac{1}{2} \times \frac{1}{9} = \frac{1}{18}$$

$$(28) \left(\frac{1}{2}\right)^2 + \left(\frac{1}{3}\right)^{-1} = \frac{1}{4} + 3 = \frac{13}{4}$$

$$(29) (6)^{-1} \left(\frac{3}{2}\right) = \frac{1}{6} \times \frac{3}{2} = \frac{1}{4}$$