$$x^a \cdot x^b = x^{a+b}$$

$$\frac{x^a}{x^b} = x^{a-b}$$

$$(x^a)^b = x^{ab}$$

$$a^{1/}$$

Exponents And Roots

(1)

$$25^7 \quad 5^{15}$$

$$5^{14} \quad <$$

(2)

$$216 = 2^x 3^y$$

2×108

$2 \times 54 \times 2$

$2 \times 2 \times 2 \times 3^3$

$x = y$

(3)

$\sqrt{38} \quad \not= \quad \sqrt{6}$

(4)

$\sqrt{3} + \sqrt{6} \quad > \quad \sqrt{9}$

4.1815

(5)

$\sqrt{7,777,777,777} > 88000$

(6)

$5000 = 2^x 5^y$

$2 \times 25 \times 100 \times$

$2 \times 25 \times 25 \times 4$

$2^3 \times 5^4$

$\neq \Rightarrow x+y$

Date

(7) $3^2 9^2 = 3^x$ $\quad x \Rightarrow 6$

(8) $\frac{80}{2^x} \Rightarrow x > y$ $\quad \frac{8^{16}}{\times 5}{}^{80}$ cannot determine

(9) $\frac{9^4 \times (900)^3}{9^8 \times 10^6} > \frac{270^6}{9^3 \times 10^6}$

(10) $17\sqrt[3]{m} = 34$ $\quad 6\sqrt[3]{m}$

$\frac{3^2 4}{17} \times 6$ $\quad$ 12 Ans

(11) $\frac{1/1}{1/5^{-2}}$ $\quad \frac{1}{25}$

(12) $77,742\, y^{11} = 4x^2$ $\quad \frac{1}{2}$ Ans

(13) $\sqrt{2+\sqrt{2+\sqrt{2+2}}}$ $\quad \sqrt{2+\sqrt{2+2}} = 2$ Ans

(14) $14.1421 = 14.14$

equal

(15) $x^2 \quad x^3 = x^9$

$729/3 = (9 * 27)$

243

Date

(16) 0 | 2/5 | 4/5 | 6/5 | 8/5 | 10/5 | 2

$\uparrow^{1/3} \Rightarrow 4x \Rightarrow \frac{8}{5}$

$p \Rightarrow \frac{8 \times 8 \times 8}{125} \Rightarrow \frac{512}{125}$

(17) $2^{99} - 2^{96}$

$2^{96}(2^3 - 1)$

7

(18) $2^K - 2^{K+1} + 2^{K-1} = 2^K m$

$2^K - 2^K 2^1 + \frac{2^K}{2} \Rightarrow 2^K\left(1 - 2 + \frac{1}{2}\right)$

$\Rightarrow 2^K\left(-1 + \frac{1}{2}\right) \Rightarrow \frac{-2+1}{2}$

$m = -1/2$

(19) $\frac{2}{9}(81)^{50} \qquad \frac{(3^2)(9)^{99}}{2}$

$\frac{(2)\,9^{100}}{9} \quad 9^{99} <$

(20) $5^{K+1} = 2000$

$5^K \Rightarrow 400$

401

(21) $3^{11} = 9^x$

$9^5 \quad 8$

177147

$9^{11/2}$

Date

(21) $x^7 = 2.5$ $\quad (2.5 \times 2.5)$

(6.25)

(23) $\sqrt[5]{x^6} = x^{9/6}$ $\quad (6/5)$

(24) $\dfrac{20^{-5} 5^{10} 8^6}{10^8 25^{-2}}$ $\quad \dfrac{2^{-5} \times 10^{-5} \times 5^{10} \times 2^{18}}{2^8 \times 5^8 \times}$

$\dfrac{5^{10} \times 2^{18} \times 5^4}{2^8 \times 5^8 \times 2^5 \times 2^5 \times 5^5}$ $\quad (5)$ A

(25) $\dfrac{5^7}{5^{-4}} = 5^9$ $\quad \dfrac{2^{-3}}{2^{-2}} = 2^b$ $\quad 9^8(3) = 3^c$

[11] + [-1] + [9]

(19) A

(26) 12^x is odd & integer $\quad 12^0 = 1$

12
144
1728

$x = 0$ $\quad a^{12} \Rightarrow (0)$ A

(27) $\dfrac{200^{5/2}}{\sqrt{200}}$ $\quad 200^{\frac{5}{2} - \frac{1}{2}}$ $\quad 200^2$

40000 A

Date

(28) $\frac{(10^3)(0.027)}{(900)(10^{-2})} = (3)(10^m)$

$\frac{10^3 \times 10^{-3} \times 3^3}{3^2 \times 10^2 \times 10^{-2}} \Rightarrow (3)$ $\quad 10^m \Rightarrow (0)$

$m = 0$ ←

(29) $\frac{1}{3}(10^6 - 10^4) = ?$

$1000000 - 10000 = 990000$

$\frac{990000}{3}$

330,000

(30) $\frac{2^2+2^2+2^3+2^4}{(\sqrt{5}+\sqrt{3})(\sqrt{5}-\sqrt{3})}$ $\quad \frac{4+4+8+16}{5-3} = \frac{16}{2}$

$\Rightarrow 16$

(31) $\frac{2^{-4}\,3^{-20}}{4^{-1}\,9^{-6}}$ $\quad \frac{2^{-4}\,3^{-20}}{2^{-2}\,3^{-12}}$ $\quad 2^{-2}\,3^{-8}$

$\frac{1}{2^2\,3^8}$ A

(32) $\frac{0.000027 \times 10^x}{900 \times 10^{-4}} = 0.03 \times 10^{11}$

$\frac{10^{-6} \times 3^3 \times 10^x}{10^2 \times 3^2 \times 10^{-4}} \Rightarrow 3 \times 10^9$

$-6 + x + 4 - 2 = 9$

$x - 4 = 9$

$x = 13$ A

Date

33 $\left(\sqrt[2]{x}\right)\left(\sqrt[3]{x}\right)$ $x^{1/2+1/3}$ $3+2$ $5/6$

$\sqrt[6]{x^5}$

34 $x^{2/3} \cdot x^{5/4}$ $\frac{2}{3}+\frac{5}{4} \Rightarrow \frac{8+15}{12} \Rightarrow \frac{23}{12}$

$\sqrt[12]{x^{23}}$

35 $n = 0.00025 \times 10^4$ | $m = 0.005 \times 10^2$

$\frac{5^2 \times 10^{-1}}{5 \times 10^{-3+2}}$ (5) > 0.5

36 $3^{48}\left(4^2 10^2 - 1\right) \Rightarrow 10^3 (1599)$

37 $x^{3/2}$

$x\sqrt{x}$

38 $\sqrt{6 \times 60 \times 12 \times 20 \times 3 \times 2}$

$[2\times3]\times[2\times3\times2\times5]\times[2\times2\times3]\times[2\times2\times5]\,[3\times2]$

$[3\times2\times2\times2\times2\times5\times3\times2]$

(32×45)

1440

45

$\times 32$

90

135 0

1440

Date

(39) $125^{14} 48^{8}$

$(5^{3 \times 14})$

(42) A.