Luỹ thừa với số mũ tự nhiên

Bài 1

a, $7.7.7.7.7 = 7^5$

b, $4.8.8.8.2$
$= 4.2.8.8.8$
$= 8^4$

c, $3.3.3.9$
$= 3.3.3.3.3$
$= 3^5$

d $10.2.2.5.5$
$= 10.2.5.2.5$
$= 10^3$

Bài 2

a) a $2^5 = 32$ b, $3^4 = 81$ c, $5^3 = 125$ ~~d $10^6 = 100$~~

d, $10^6 = 100\,0000$

Bài 3

a) a) $5.5^2.5^3$
$= 5^1.5^2.5^3 = 5^{1+2+3}$
$= 5^6$

b, $3^3.9^2$
$= 3^3.3^2 = 3^{3+2}$
$= 3^5$

c) c, $48^8.8^4$
$= 48.(2.4)^4 = 48^8.2^4.4^4$
$= 48.4^4.4^2 = 4^{14}$

d) d, $7^4.343.49^2 = 7^4.7^3.(7^2)^2$
$= 7^4.7^3.7^4 = 7^{4+3+4} = 7^{11}$

e) $7^5 : 7^2 = 7^{5-2} = 7^3$

g, $729 : 3^3 : 9 = 7\,8^6 : 3^3 : 3^2 = 3^{6-3-2} = 3^1$

h, $125^{10} : 25^6 = 125^{10} : (5^3)^{10} : (5^2)^6$
$= 5^{30} : 5^{12} = 5^{30-12} = 5^{18}$

i, $16^3 : 8^4 = (2^4)^3 : (2^3)^4$
$= 2^{12} : 2^{12} = 2^0 = 1$

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Bài 4

a, $A = 2^2 \cdot 5^2 - 3^2 - 10$

$= 4 \cdot 25 - 9 - 10$

$= 100 - 9 - 10$

$= 81 = 3^3$

b, $B = 3^2 \cdot 4^3 - 3^2 + 333$

$= 3^2 (4^3 - 1) + 333$

$= 9 \cdot 63 + 333$

$= 567 + 333$

$= 900 = 30^2$

c $2^{10} \cdot 15 + 2^{10} \cdot 17$

$= 2^{10} \cdot (15 + 17)$

$= 2^{10} \cdot 32$

$= 2^{10} \cdot 2^5$

$= 2^{10+5}$

$= 2^{15}$

d, $D = 5^{12} \cdot 7 - 5^{11} \cdot 10$

$= 5^{11} \cdot 5 \cdot 7 - 5^{11} \cdot 10$

$= 5^{11} \cdot (35 - 10)$

$= 5^{11} \cdot 25$

$= 5^{11} \cdot 5^2$

$= 5^{11+2}$

$= 5^{13}$

Bài 5

a, $2^n = 16$

$\Leftrightarrow 2^n = 4$

$\Rightarrow N = 4$

c) $5^{2n-1} = 5$

$\Rightarrow 5^{2n-1} = 5^1$

$\Rightarrow 2n - 1 = 1$

$\Rightarrow 2n = 1 + 1$

$2n = 2 \Rightarrow n = 2 : 2$

$n = 1$

$2^n \cdot 2^4 = 128$

$2^n \cdot 2^4 = 2^7$

$2^{n+4} = 2^7$

$n + 4 = 7$

$\Rightarrow N = 3$

d) $5^6 : 5^n = 625$

$\Rightarrow 5^6 : 5^N = 5^4$

$\Rightarrow 5^{6-n} = 5^4$

$\Rightarrow 6 - N = 4$

$\Rightarrow 6 - 4 = N$

$\Rightarrow 2 = n$

$4^n \cdot 2^N = 512$

$(2^2)^n \cdot 2^N = 2^9$

$= 2^{2N} \cdot 2^N = 2^9 = 2^{2 \cdot N + n} = 2^9$

$= (2^2)$

$2^3 n = 2^9$

$3n = 9$

$n = 9 : 3$

$n = 3$

Bài 1

g, $3^n + 3^{n+3} = 252$

$3^n + 3^{n+3} = 252$

$3^n + 3^n \cdot 3^3 = 252$

$3^n (1 + 27) = 252$

$3^n = 9$

$3^n = 3^2$

$n = 2$

Bài 6

$x^3 = 27$

$\Rightarrow x^3 = 3^3$

$\Rightarrow x = 3$

b, $2x^3 = 4$

$2x^3 = 12 + 4$

$2x^3 = 16$

$2x^3 = 16 : 2$

$x^3 = 8$

$x^3 = 2^3$

$\Rightarrow x = 2$

c, $(x+1)^2 = 16$

$(x+1)^2 = 4^2$

$\Rightarrow x = x + 1 = 4$

$\Rightarrow x = 3$

d, $(2x-1)^3 = 125$

$(2x-1)^3 = 5^3$

$2x - 1 = 5$

$2x = 5 + 1$

$2x = 6$

$x = 6 : 2$

$x = 3$

$(x+2)^3 = (2x)^3$

$x + 2 = 2x$

$x - 2 =$

$2 = 2x - x$

$2 = x$

$(2+2)^3 = (2 \cdot 2)^3$

$= 4^3 = 4^3$

$\Rightarrow x = 4$

g. $x^5 = x^9$

$\Rightarrow x^9 - x^5 = 0$

$\Leftrightarrow x^5(4 - 1) = 0$

$x^5 = 0 \Rightarrow x = 0$

$x^4 - 1 = 0$

$x^4 = 1$