36. If $3^{8^{2x}} = 81^{2^{5x}}$ then $x = ?$

$(2^3)^{2x} = 2^{6x}$

$(3)^{8^{2x}} = (3^4)^{2^{5x}}$

$(3)^{8^{2x}} = (3)^{2^{2+5x}}$

$8^{2x} = (2)^{2+5x}$

$2^{6x} = (2)^{2+5x}$

$6x = 2 + 5x$

$x = 2$

$(3^4)^{2^{5x}}$

$3^{4 \times 2^{5x}}$

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

$a^m \times a^n$

$2^2 \times 2^{5x} = 2^{2+5x}$

37. If $3^{x+y} = 81$ and $81^{x-y} = 3$ then $x * y = ?$

(a) $\frac{255}{64}$ (b) $\frac{125}{32}$ (c) $\frac{240}{64}$ (d) None

$8 = 2^3$ $32 = 2^5$

38. If $8^{3x-5} = \frac{1}{32^{7-4x}}$ then $x = ?$

$(2^3)^{3x-5}$ $(2^5)^{7-4x}$

2^{9x-15} 2^{35-20x}

(a) $\frac{16}{9}$ (b) $\frac{20}{11}$

(c) $\frac{25}{13}$ (d) 2

$\frac{1}{2^{35-20x}} = 2^{-(35-20x)}$

$= 2^{-35+20x}$

$2^{9x-15} = 2^{-35+20x}$

$9x - 15 = -35 + 20x$

$-15 + 35 = 20x - 9x$

$20 = 11x$

$x = \frac{20}{11}$

39. Most Imp.

If $\left(x^{x}\right)^{\frac{5}{4}} = x^{x^{\frac{5}{4}}}$ then $x = ?$

$\frac{a^m}{a^n} = a^{m-n}$

$(x)^{\frac{5x}{4}} = (x)^{x\frac{5}{4}}$

$\frac{5x}{4} = x\frac{5}{4}$

$\frac{5}{4} = \frac{x^{\frac{5}{4}}}{x^1} = x^{\left(\frac{5}{4}-1\right)} = x^{\frac{1}{4}}$

$\frac{5}{4} = x^{\frac{1}{4}}$

$\left(\frac{5}{4}\right)^4 = x \longrightarrow x = \frac{625}{256}$

$5+3+7$
$a^2+b^2+c^2$

40. If $\sqrt{15+\sqrt{60}+\sqrt{84}+\sqrt{140}} = \sqrt{a}+\sqrt{b}+\sqrt{c}$, then the value of $a+b+c$?

$2\times\sqrt{5}\times\sqrt{3}$ $+2\times\sqrt{3}\times\sqrt{7}$ $+2\times\sqrt{7}\times\sqrt{5}$
$2\times a\times b$ $2\times b\times c$ $2\times c\times a$

(a) 5 (b) 20

(c) 10 (d) 15

$\sqrt{60}=\sqrt{4\times15}=2\times\sqrt{3}\times\sqrt{5}$

$\sqrt{84}=\sqrt{4\times21}=2\times\sqrt{3}\times\sqrt{7}$

$\sqrt{140}=\sqrt{4\times35}=2\times\sqrt{7}\times\sqrt{5}$

$$(a+b+c)^2 = a^2+b^2+c^2+2ab+2bc+2ca$$

Yes | no

$(\sqrt{a})^2+(\sqrt{b})^2+(\sqrt{c})^2$
$a + b + c$
$5 + 3 + 7$
$= 15$

40. If $\sqrt{15+\sqrt{60}+\sqrt{84}+\sqrt{140}} = \sqrt{a}+\sqrt{b}+\sqrt{c}$, then the value of $a+b+c$?

(a) 5 (b) 20

(c) 10 (d) 15

$2\times\sqrt{5}\times\sqrt{3}$ $2\times\sqrt{3}\times\sqrt{7}$ $2\times\sqrt{7}\times\sqrt{5}$

$\sqrt{(\sqrt{5}+\sqrt{3}+\sqrt{7})^2} = \sqrt{a}+\sqrt{b}+\sqrt{c}$

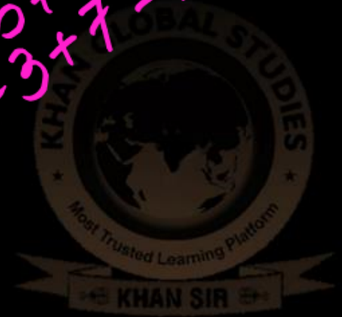
$\sqrt{5}+\sqrt{3}+\sqrt{7} = \sqrt{a}+\sqrt{b}+\sqrt{c}$

$a=5$ $b=3$ $c=7$

$a+b+c$

$5+3+7=15$

$(a+b+c)^2 = a^2+b^2+c^2+2ab+2bc+2ca$



41. The expresion $\sqrt{10+2\left(\sqrt{6}-\sqrt{15}-\sqrt{10}\right)}$ is equal to :

$\sqrt{10+2\left(\sqrt{6}-\sqrt{15}-\sqrt{10}\right)}$ का मान है–

By option

(a) $\sqrt{3}-\sqrt{2}-\sqrt{5}$

(b) $\sqrt{3}-\sqrt{2}+\sqrt{5}$

(c) $\sqrt{2}-\sqrt{3}-\sqrt{5}$

(d) $\sqrt{3}+\sqrt{2}-\sqrt{5}$

42. What is the square root of $23+4\sqrt{10}-10\sqrt{2}-8\sqrt{5}$?

$\sqrt{23+2(2\sqrt{10}-5\sqrt{2}-4\sqrt{5})}$

By option

(a) $\sqrt{5}+\sqrt{10}-2\sqrt{2}$ $-2\sqrt{10}$

(b) $\sqrt{5}+2\sqrt{2}+\sqrt{10}$

(c) $\sqrt{5}-\sqrt{10}+2\sqrt{2}$

(d) $2\sqrt{2}-\sqrt{5}+\sqrt{10}$ $-2\sqrt{10}$

$(a+b)^2 = a^2+2ab+b^2$

$(a-b)^2 = a^2-2ab+b^2$

eg:

(1) $\sqrt{9+4\sqrt{5}} = 2+\sqrt{5}$

$9+4\sqrt{5} \Downarrow 2\times 2\times\sqrt{5}$

$2\times a\times b$

$a^2 + b^2$

$2^2 + \sqrt{5}^2$

$4 + 5$

$\sqrt{19+8\sqrt{3}} = 4+\sqrt{3}$

$19+8\sqrt{3} \Downarrow 2\times 4\times\sqrt{3}$

$2\times a\times b$

$a^2 + b^2$

$16 + 3$

(i) $\sqrt{(a+b)^2} \Longrightarrow (a+b)$

(ii) $\sqrt{(a-b)^2}$

- $(a-b)$ $a>b$
- $(b-a)$ $b>a$

$$\sqrt{14+6\sqrt{5}} = 3+\sqrt{5}$$

$$14+6\sqrt{5} = 2\times 3\times\sqrt{5}$$

$$\sqrt{11+6\sqrt{2}} = 3+\sqrt{2}$$

$$11+6\sqrt{2} = 2\times 3\times\sqrt{2}$$

$$\sqrt{7-4\sqrt{3}} = 2-\sqrt{3}$$

$$7-4\sqrt{3} = 2\times 2\times\sqrt{3}$$

$$\sqrt{3}-2 \times$$

$$\sqrt{4}-\sqrt{3}$$

43. Find the ssquare root of

H.W R.W

(a) $7+4\sqrt{3}$

***

(b) $4+\sqrt{15}$

H.W/R.W

(c) $61+28\sqrt{3}$

H.W/R.W

(d) $139-80\sqrt{3}$

H.W/R.W

(e) $74-12\sqrt{30}$

$$\sqrt{\frac{(4+\sqrt{15})\times 2}{2}} = \sqrt{\frac{8+2\sqrt{15}}{2}} \quad (2\times\sqrt{3}\times\sqrt{5}) \quad = \frac{\sqrt{3}+\sqrt{5}}{\sqrt{2}}$$

$$\sqrt{7+3\sqrt{5}} = \sqrt{\frac{(7+3\sqrt{5})\times 2}{2}} = \frac{\sqrt{14+6\sqrt{5}}}{\sqrt{2}} \quad (2\times 3\times\sqrt{5}) \quad = \frac{3+\sqrt{5}}{\sqrt{2}}$$

$$\# \quad \sqrt{\frac{(14+5\sqrt{3})\times 2}{2}} = \frac{\sqrt{28+10\sqrt{3}}}{\sqrt{2}} = \frac{5+\sqrt{3}}{\sqrt{2}}$$

$2\times 5\times\sqrt{3}$

Simplification

सरलीकरण