

Esercizi su: Esercizi sui radicali

1. Calcola la seguente espressione.

$$(a) \sqrt{7 + \sqrt{-5 + \sqrt{71 + \sqrt{98 + \sqrt{4}}}}} \quad [3]$$

$$(b) \sqrt{18 + \sqrt{59 - \sqrt{103 - \sqrt{6 + \sqrt{9}}}}} \quad [5]$$

$$(c) \sqrt{31 + \sqrt{19 + \sqrt{25 + \sqrt{119 + \sqrt{4}}}}} \quad [6]$$

$$(d) \sqrt{160 + \sqrt{74 + \sqrt{53 - \sqrt{9 + \sqrt{49}}}}} \quad [13]$$

$$(e) \sqrt{154 - \sqrt{106 - \sqrt{38 - \sqrt{1 + \sqrt{9}}}}} \quad [12]$$

$$(f) \sqrt{219 + \sqrt{27 + \sqrt{77 + \sqrt{26 - \sqrt{100}}}}} \quad [15]$$

$$(g) \sqrt{-7 + \sqrt{110 + \sqrt{126 - \sqrt{35 - \sqrt{100}}}}} \quad [2]$$

$$(h) \sqrt{251 + \sqrt{20 + \sqrt{17 + \sqrt{55 + \sqrt{83 - \sqrt{4}}}}} \quad [16]$$

$$(i) \sqrt{173 - \sqrt{24 - \sqrt{54 + \sqrt{89 + \sqrt{118 + \sqrt{9}}}}} \quad [13]$$

$$(j) \sqrt{39 + \sqrt{112 - \sqrt{152 - \sqrt{70 - \sqrt{47 - \sqrt{121}}}}} \quad [7]$$

$$(k) \sqrt{237 - \sqrt{156 - \sqrt{155 - \sqrt{111 + \sqrt{96 + \sqrt{16}}}}} \quad [15]$$

$$(l) \sqrt{66 - \sqrt{13 - \sqrt{87 - \sqrt{29 + \sqrt{46 + \sqrt{4 + \sqrt{25}}}}} \quad [8]$$

$$(m) \sqrt{194 + \sqrt{3 + \sqrt{-9 + \sqrt{96 + \sqrt{17 - \sqrt{6 - \sqrt{25}}}}} \quad [14]$$

$$(n) \sqrt{0 + \sqrt{27 - \sqrt{120 + \sqrt{-8 + \sqrt{71 + \sqrt{95 + \sqrt{25}}}}} \quad [2]$$

$$(o) \sqrt{-8 + \sqrt{72 - \sqrt{53 + \sqrt{124 - \sqrt{3 + \sqrt{40 - \sqrt{16}}}}} \quad [0]$$

$$(p) \sqrt{18 + \sqrt{58 - \sqrt{90 - \sqrt{79 + \sqrt{-4 + \sqrt{54 + \sqrt{100}}}}} \quad [5]$$

$$(q) \sqrt{199 - \sqrt{14 - \sqrt{37 - \sqrt{139 + \sqrt{27 - \sqrt{8 - \sqrt{16}}}}}}}} \quad [14]$$

$$(r) \sqrt{127 - \sqrt{43 - \sqrt{47 + \sqrt{7 - \sqrt{19 - \sqrt{88 + \sqrt{144}}}}}}}} \quad [11]$$

$$(s) \sqrt{163 + \sqrt{24 + \sqrt{156 - \sqrt{136 + \sqrt{53 + \sqrt{120 + \sqrt{1}}}}}}}} \quad [13]$$

$$(t) \sqrt{233 - \sqrt{54 + \sqrt{106 - \sqrt{41 - \sqrt{36 - \sqrt{110 + \sqrt{121}}}}}}}} \quad [15]$$

$$(u) \sqrt{8 - \sqrt{9 + \sqrt{39 + \sqrt{101 - \sqrt{12 - \sqrt{110 + \sqrt{122 - \sqrt{1}}}}}}}}}} \quad [2]$$

$$(v) \sqrt{39 - \sqrt{3 + \sqrt{24 + \sqrt{152 - \sqrt{56 + \sqrt{68 - \sqrt{11 + \sqrt{25}}}}}}}}}} \quad [6]$$

$$(w) \sqrt{43 - \sqrt{53 - \sqrt{17 - \sqrt{-4 + \sqrt{34 - \sqrt{82 - \sqrt{-7 + \sqrt{64}}}}}}}}}} \quad [6]$$

$$(x) \sqrt{199 - \sqrt{19 - \sqrt{101 - \sqrt{7 - \sqrt{25 + \sqrt{131 - \sqrt{98 + \sqrt{4}}}}}}}}}} \quad [14]$$

$$(y) \sqrt{259 - \sqrt{11 - \sqrt{1 + \sqrt{13 - \sqrt{19 - \sqrt{-2 + \sqrt{111 + \sqrt{100}}}}}}}}}} \quad [16]$$

$$(z) \sqrt{111 + \sqrt{95 + \sqrt{13 + \sqrt{135 + \sqrt{92 - \sqrt{116 + \sqrt{24 + \sqrt{1}}}}}}}}}} \quad [11]$$

2. Calcola la seguente espressione.

$$(a) \sqrt{2 - \sqrt{7/3 - \sqrt{157/63 - \sqrt{-3/49 + \sqrt{16/49}}}}}} \quad [1]$$

$$(b) \sqrt{51 - \sqrt{21/5 - \sqrt{86/275 - \sqrt{-233/121 + \sqrt{4}}}}}} \quad [7]$$

$$(c) \sqrt{3/2 - \sqrt{59/12 - \sqrt{101/18 + \sqrt{31/12 - \sqrt{1/9}}}}}} \quad [0]$$

$$(d) \sqrt{27/8 + \sqrt{537/64 - \sqrt{513/8 - \sqrt{-61/192 + \sqrt{1/9}}}}}} \quad [2]$$

$$(e) \sqrt{143 + \sqrt{4 - \sqrt{44/5 + \sqrt{-121/100 + \sqrt{33/16 - \sqrt{1/4}}}}} \quad [12]$$

$$(f) \sqrt{341/2 - \sqrt{-15/4 + \sqrt{143/4 + \sqrt{67/48 - \sqrt{37/36 + \sqrt{9/16}}}}} \quad [13]$$

$$(g) \sqrt{194 + \sqrt{13/3 - \sqrt{-80/9 + \sqrt{965/12 + \sqrt{139/144 - \sqrt{25/64}}}}} \quad [14]$$

$$(h) \sqrt{367/3 - \sqrt{23/18 + \sqrt{35/44 - \sqrt{1292/1089 - \sqrt{-17/81 + \sqrt{1}}}}} \quad [11]$$

$$(i) \sqrt{23 + \sqrt{31/8 + \sqrt{-757/704 + \sqrt{-703/121 + \sqrt{383/8 + \sqrt{81/64}}}}} \quad [5]$$

$$(j) \sqrt{1186/7 - \sqrt{-249/245 + \sqrt{-14/25 + \sqrt{31/6 - \sqrt{-41/36 + \sqrt{25/4}}}}} \quad [13]$$

$$(k) \sqrt{665/3 + \sqrt{433/36 - \sqrt{265/144 - \sqrt{13/2 - \sqrt{1339/44 - \sqrt{4/121}}}}} \quad [15]$$

$$(l) \sqrt{121/7 - \sqrt{111/245 + \sqrt{-89/25 + \sqrt{272/11 + \sqrt{-1322/121 + \sqrt{121}}}}} \quad [4]$$

$$(m) \sqrt{253/4 + \sqrt{101/80 - \sqrt{223/200 - \sqrt{147/704 + \sqrt{-956/363 + \sqrt{64/9}}}}} \quad [8]$$

$$(n) \sqrt{581/9 - \sqrt{131/162 - \sqrt{5/4 - \sqrt{1/2 + \sqrt{17/20 - \sqrt{-1/25 + \sqrt{4/25}}}}} \quad [8]$$

$$(o) \sqrt{258 - \sqrt{17/4 - \sqrt{-23/16 + \sqrt{55/12 - \sqrt{163/36 + \sqrt{841/144 - \sqrt{25}}}}} \quad [16]$$

$$(p) \sqrt{143 + \sqrt{3/2 - \sqrt{-3/2 + \sqrt{263/112 + \sqrt{295/98 - \sqrt{199/28 - \sqrt{36/49}}}}} \quad [12]$$

$$(q) \sqrt{129 - \sqrt{316/5 + \sqrt{317/300 - \sqrt{-1603/720 + \sqrt{407/75 + \sqrt{-17/9 + \sqrt{4}}}}} \quad [11]$$

$$(r) \sqrt{257/4 - \sqrt{-7/144 + \sqrt{-961/891 + \sqrt{-98/121 + \sqrt{-1 + \sqrt{299/12 + \sqrt{1/144}}}}} \quad [8]$$

$$(s) \sqrt{711/5 + \sqrt{71/25 + \sqrt{287/75 - \sqrt{1259/99 + \sqrt{761/1210 - \sqrt{801/100 - \sqrt{64}}}}} \quad [12]$$

$$(t) \sqrt{36/11 + \sqrt{1544/1089 - \sqrt{391/324 - \sqrt{265/144 - \sqrt{23/18 + \sqrt{39/20 + \sqrt{9/100}}}}} \quad [2]$$

$$(u) \sqrt{2824/11 - \sqrt{875/968 - \sqrt{145/576 - \sqrt{46/81 - \sqrt{-947/81 + \sqrt{573/4 + \sqrt{9/16}}}}}]} \quad [16]$$

$$(v) \sqrt{1165/6 + \sqrt{193/36 - \sqrt{15/4 + \sqrt{-95/16 + \sqrt{26 + \sqrt{96 + \sqrt{119/8 + \sqrt{81/64}}}}}]}]} \quad [14]$$

$$(w) \sqrt{667/4 + \sqrt{235/48 + \sqrt{19/36 - \sqrt{-7/4 + \sqrt{5/4 + \sqrt{105/16 + \sqrt{-2/7 + \sqrt{81/49}}}}}]}]} \quad [13]$$

$$(x) \sqrt{148/3 - \sqrt{-61/18 + \sqrt{51/4 - \sqrt{-17/20 + \sqrt{71/100 + \sqrt{3 - \sqrt{911/112 - \sqrt{16/49}}}}}]}]} \quad [7]$$

$$(y) \sqrt{99 + \sqrt{3/5 + \sqrt{33/50 - \sqrt{51/28 - \sqrt{1046/245 - \sqrt{197/50 - \sqrt{-7/75 + \sqrt{49/144}}}}}]}]} \quad [10]$$

$$(z) \sqrt{397/11 - \sqrt{-118/363 + \sqrt{25/63 - \sqrt{-397/539 + \sqrt{202/121 - \sqrt{3 - \sqrt{23/8 + \sqrt{81/64}}}}}]}]} \quad [6]$$

### 3. Semplifica i radicali portando fuori da radice i fattori possibili

- (a)  $\sqrt{2025} =$  [45]  
 (b)  $\sqrt{2025} =$  [45]  
 (c)  $\sqrt{77} =$  [ $\sqrt{77}$ ]  
 (d)  $\sqrt{77} =$  [ $\sqrt{77}$ ]  
 (e)  $\sqrt{175} =$  [ $5\sqrt{7}$ ]  
 (f)  $\sqrt{143} =$  [ $\sqrt{143}$ ]  
 (g)  $\sqrt{567} =$  [ $9\sqrt{7}$ ]  
 (h)  $\sqrt{143} =$  [ $\sqrt{143}$ ]  
 (i)  $\sqrt{325} =$  [ $5\sqrt{13}$ ]  
 (j)  $\sqrt{352} =$  [ $4\sqrt{22}$ ]  
 (k)  $\sqrt{325} =$  [ $5\sqrt{13}$ ]  
 (l)  $\sqrt{325} =$  [ $5\sqrt{13}$ ]  
 (m)  $\sqrt{800} =$  [ $20\sqrt{2}$ ]  
 (n)  $\sqrt{800} =$  [ $20\sqrt{2}$ ]  
 (o)  $\sqrt{352} =$  [ $4\sqrt{22}$ ]  
 (p)  $\sqrt{800} =$  [ $20\sqrt{2}$ ]  
 (q)  $\sqrt{352} =$  [ $4\sqrt{22}$ ]  
 (r)  $\sqrt{325} =$  [ $5\sqrt{13}$ ]  
 (s)  $\sqrt{352} =$  [ $4\sqrt{22}$ ]  
 (t)  $\sqrt{416} =$  [ $4\sqrt{26}$ ]

(u) $\sqrt{275} =$	$[5\sqrt{11}]$
(v) $\sqrt{224} =$	$[4\sqrt{14}]$
(w) $\sqrt{800} =$	$[20\sqrt{2}]$
(x) $\sqrt{1053} =$	$[9\sqrt{13}]$
(y) $\sqrt{1053} =$	$[9\sqrt{13}]$
(z) $\sqrt{1053} =$	$[9\sqrt{13}]$

4. Esegui le seguenti operazioni con i radicali

(a) $4\sqrt{2} + 5\sqrt{3} - 6\sqrt{3}$	$[4\sqrt{2} - 1\sqrt{3}]$
(b) $8\sqrt{3} + 2\sqrt{2} + 4\sqrt{3} + 7\sqrt{2}$	$[12\sqrt{3} + 9\sqrt{2}]$
(c) $12\sqrt{2} - 3\sqrt{3} - 2\sqrt{3} - 11\sqrt{2}$	$[1\sqrt{2} - 5\sqrt{3}]$
(d) $-4\sqrt{3} + 6\sqrt{3} - 11\sqrt{3} - 1\sqrt{2}$	$[-9\sqrt{3} - 1\sqrt{2}]$
(e) $11\sqrt{2} + 12\sqrt{3} + 2\sqrt{2} - 11\sqrt{3}$	$[13\sqrt{2} + 1\sqrt{3}]$
(f) $-7\sqrt{2} - 5\sqrt{3} + 12\sqrt{3} - 4\sqrt{2}$	$[-11\sqrt{2} + 7\sqrt{3}]$
(g) $-12\sqrt{3} - 9\sqrt{3} + 4\sqrt{3} + 6\sqrt{2}$	$[-17\sqrt{3} + 6\sqrt{2}]$
(h) $-9\sqrt{2} - 11\sqrt{3} + 6\sqrt{2} - 7\sqrt{3}$	$[-3\sqrt{2} - 18\sqrt{3}]$
(i) $5\sqrt{2} + 9\sqrt{3} - 7\sqrt{3} - 8\sqrt{3} - 2\sqrt{2}$	$[3\sqrt{2} - 6\sqrt{3}]$
(j) $2\sqrt{2} + 1\sqrt{3} - 2\sqrt{3} - 7\sqrt{2} + 5\sqrt{3}$	$[-5\sqrt{2} + 4\sqrt{3}]$
(k) $-3\sqrt{2} + 2\sqrt{3} + 1\sqrt{2} + 7\sqrt{3} - 6\sqrt{2}$	$[-8\sqrt{2} + 9\sqrt{3}]$
(l) $10\sqrt{2} + 7\sqrt{3} - 2\sqrt{2} - 7\sqrt{3} + 2\sqrt{2}$	$[10\sqrt{2} + 0\sqrt{3}]$
(m) $8\sqrt{2} - 8\sqrt{3} + 1\sqrt{2} + 10\sqrt{2} + 5\sqrt{2}$	$[24\sqrt{2} - 8\sqrt{3}]$
(n) $2\sqrt{3} - 11\sqrt{3} - 9\sqrt{2} - 8\sqrt{2} + 9\sqrt{2}$	$[-9\sqrt{3} - 8\sqrt{2}]$
(o) $-3\sqrt{2} + 6\sqrt{2} + 5\sqrt{2} + 2\sqrt{2} - 8\sqrt{3}$	$[10\sqrt{2} - 8\sqrt{3}]$
(p) $4\sqrt{2} - 4\sqrt{3} - 12\sqrt{2} - 8\sqrt{3} + 2\sqrt{2}$	$[-6\sqrt{2} - 12\sqrt{3}]$
(q) $7\sqrt{3} - 3\sqrt{3} - 7\sqrt{2} - 12\sqrt{3} - 8\sqrt{2}$	$[-8\sqrt{3} - 15\sqrt{2}]$
(r) $5\sqrt{2} - 5\sqrt{3} + 2\sqrt{3} + 9\sqrt{2} - 11\sqrt{3}$	$[14\sqrt{2} - 14\sqrt{3}]$
(s) $11\sqrt{3} + 10\sqrt{2} - 1\sqrt{2} + 4\sqrt{2} + 1\sqrt{2}$	$[11\sqrt{3} + 14\sqrt{2}]$
(t) $4\sqrt{2} - 6\sqrt{2} - 7\sqrt{3} - 9\sqrt{3} - 12\sqrt{2}$	$[-14\sqrt{2} - 16\sqrt{3}]$
(u) $-2\sqrt{2} - 6\sqrt{3} - 7\sqrt{3} - 10\sqrt{3} + 4\sqrt{3}$	$[-2\sqrt{2} - 19\sqrt{3}]$
(v) $-7\sqrt{3} - 11\sqrt{3} - 8\sqrt{2} + 3\sqrt{3} + 12\sqrt{3}$	$[-3\sqrt{3} - 8\sqrt{2}]$
(w) $9\sqrt{2} + 3\sqrt{2} - 8\sqrt{2} - 12\sqrt{2} - 10\sqrt{3}$	$[-8\sqrt{2} - 10\sqrt{3}]$
(x) $2\sqrt{2} + 7\sqrt{3} - 6\sqrt{2} - 12\sqrt{2} - 10\sqrt{2}$	$[-26\sqrt{2} + 7\sqrt{3}]$
(y) $-7\sqrt{3} + 12\sqrt{3} - 12\sqrt{3} + 8\sqrt{2} - 4\sqrt{3}$	$[-11\sqrt{3} + 8\sqrt{2}]$
(z) $-12\sqrt{3} + 11\sqrt{2} - 6\sqrt{2} + 4\sqrt{2} - 10\sqrt{3}$	$[-22\sqrt{3} + 9\sqrt{2}]$

5. Semplifica i seguenti radicali.

(a) $-1\sqrt{3} - 8\sqrt{3} - 9\sqrt{3} + 7\sqrt{3} + 3\sqrt{3}$	$[-8\sqrt{3}]$
(b) $\sqrt{1053} =$	$[9\sqrt{13}]$
(c) $\sqrt{175} =$	$[5\sqrt{7}]$
(d) $7\sqrt{3} + 5\sqrt{3} + 9\sqrt{2} - 11\sqrt{3}$	$[1\sqrt{3} + 9\sqrt{2}]$

- (e)  $\sqrt{1209/10 + \sqrt{89/150 - \sqrt{1973/720 - \sqrt{532/75 - \sqrt{76/63 + \sqrt{65/49 - \sqrt{1}}}}}}}$  [11]
- (f)  $\sqrt{221 + \sqrt{9 + \sqrt{59 - \sqrt{95 + \sqrt{27 - \sqrt{4}}}}}}$  [15]
- (g)  $\sqrt{26 + \sqrt{108 - \sqrt{55 + \sqrt{77 + \sqrt{7 + \sqrt{91 - \sqrt{103 - \sqrt{9}}}}}}}}$  [6]
- (h)  $\sqrt{567} =$   $[9\sqrt{7}]$
- (i)  $\sqrt{91} =$   $[\sqrt{91}]$
- (j)  $-3\sqrt{3} + 10\sqrt{3} - 12\sqrt{3} + 5\sqrt{2}$   $[-5\sqrt{3} + 5\sqrt{2}]$
- (k)  $8\sqrt{3} - 7\sqrt{2} - 8\sqrt{3} + 7\sqrt{3} + 4\sqrt{3}$   $[11\sqrt{3} - 7\sqrt{2}]$
- (l)  $\sqrt{222 + \sqrt{103/12 + \sqrt{133/144 - \sqrt{223/112 - \sqrt{170/49 - \sqrt{100/49}}}}}}$  [15]
- (m)  $-11\sqrt{3} + 8\sqrt{2} + 12\sqrt{3} + 9\sqrt{3}$   $[10\sqrt{3} + 8\sqrt{2}]$
- (n)  $\sqrt{275} =$   $[5\sqrt{11}]$
- (o)  $\sqrt{800} =$   $[20\sqrt{2}]$
- (p)  $\sqrt{608/5 - \sqrt{-36/25 + \sqrt{193/75 + \sqrt{152/99 - \sqrt{507/121 - \sqrt{26/3 + \sqrt{41/45 - \sqrt{16/25}}}}}}}}$  [11]
- (q)  $\sqrt{0 + \sqrt{-4/3 + \sqrt{76/9 - \sqrt{7 + \sqrt{21/5 - \sqrt{1/25}}}}}}$  [1]
- (r)  $\sqrt{254 + \sqrt{13/3 - \sqrt{37/36 - \sqrt{749/720 - \sqrt{233/200 - \sqrt{849/64 - \sqrt{144}}}}}}}}$  [16]
- (s)  $\sqrt{285/2 + \sqrt{59/12 - \sqrt{119/18 + \sqrt{23/44 - \sqrt{108/121 - \sqrt{203/484 + \sqrt{-15/16 + \sqrt{1}}}}}}}}$  [12]
- (t)  $\sqrt{149/4 - \sqrt{31/16 - \sqrt{139/192 - \sqrt{677/720 - \sqrt{-11/25 + \sqrt{-34/25 + \sqrt{41/11 + \sqrt{9/121}}}}}}}}$  [6]
- (u)  $\sqrt{72/7 - \sqrt{635/147 - \sqrt{67/9 - \sqrt{13/36 - \sqrt{-11/80 + \sqrt{1/25}}}}}}$  [3]
- (v)  $\sqrt{62 + \sqrt{13 - \sqrt{92 - \sqrt{128 - \sqrt{42 + \sqrt{48 + \sqrt{1}}}}}}}}$  [8]
- (w)  $3\sqrt{3} - 12\sqrt{3} + 12\sqrt{2} + 8\sqrt{2} - 3\sqrt{2}$   $[-9\sqrt{3} + 17\sqrt{2}]$
- (x)  $\sqrt{325} =$   $[5\sqrt{13}]$
- (y)  $\sqrt{275} =$   $[5\sqrt{11}]$
- (z)  $-8\sqrt{3} - 9\sqrt{3} + 8\sqrt{2} + 3\sqrt{3} + 2\sqrt{3}$   $[-12\sqrt{3} + 8\sqrt{2}]$