

PROBLEMAS DE EXPRESIONES ALGEBRAICAS Y OPERACIONES

Problema 28:

Resolver

A) $\sqrt{(196)^3}$

B) $\sqrt{\sqrt{1874161}}$

C) $(\sqrt{57} + \sqrt{39})(\sqrt{57} - \sqrt{39})$

D) $(\sqrt{252} + \sqrt{8575})^2$

E) $(\sqrt{5} + \sqrt{3})(\sqrt{20} - \sqrt{12})$

F) $(\sqrt{5}x \sqrt{15}x\sqrt{27})^3$

G) $(\sqrt{483826} : \sqrt{9874})^3$

H) $\sqrt{777924} - \sqrt{\sqrt{3111696}} - \sqrt{30 + \sqrt{1156}} + \sqrt{4624}$

Solución Problema 28:

A) $\sqrt{(196)^3} = \sqrt{((14)^2)^3} = \sqrt{(14)^6} = (14)^3 = \mathbf{2744}$

B) $\sqrt{\sqrt{1874161}} = \sqrt{\sqrt{(1369)^2}} = \sqrt{1369} = \sqrt{(37)^2} = \mathbf{37}$

C) $(\sqrt{57} + \sqrt{39})(\sqrt{57} - \sqrt{39}) = (\sqrt{57})^2 - (\sqrt{39})^2 = 57 - 39 = \mathbf{18}$

D) $(\sqrt{252} + \sqrt{8575})^2 = 252 + 8575 + 2\sqrt{252 \times 8575} =$

$8827 + 2\sqrt{2^2 \times 3^2 \times 7 \times 5^2 \times 7^3 \times 1} = 8827 + 2(2 \times 3 \times 5 \times 7^2) =$

$8827 + 2940 = \mathbf{11767}$

PROBLEMAS DE EXPRESIONES ALGEBRAICAS Y OPERACIONES: Problema 28

$$\mathbf{E)} \quad (\sqrt{5} + \sqrt{3})(\sqrt{20} - \sqrt{12}) = (\sqrt{5} + \sqrt{3})(\sqrt{4x5x1} - \sqrt{4x3x1}) =$$

$$(\sqrt{5} + \sqrt{3})(\sqrt{4x5} - \sqrt{4x3}) = (\sqrt{5} + \sqrt{3})(2\sqrt{5} - 2\sqrt{3})$$

$$(\sqrt{5} + \sqrt{3})(2[\sqrt{5} - \sqrt{3}]) = 2(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$$

$$2(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3}) = 2(\sqrt{5})^2 - (\sqrt{3})^2 = 2(5 - 3) = 2x2 = 4$$

$$\mathbf{F)} \quad (\sqrt{5}x\sqrt{15}x\sqrt{27})^3 = (\sqrt{5})^3 x(\sqrt{15})^3 x(\sqrt{27})^3 =$$

$$(\sqrt{5})^3 x(\sqrt{15})^3 x(\sqrt{27})^3 = 5\sqrt{5}x15\sqrt{15}x27\sqrt{27} = 5x15x27x\sqrt{3^2x5^4} =$$

$$5x15x27x\sqrt{3^4x5^2} = 5x15x27x3x3x5 = \mathbf{91125}$$

$$\mathbf{G)} \quad (\sqrt{483826} : \sqrt{9874})^3$$

$$\left(\frac{\sqrt{483826}}{\sqrt{9874}}\right)^3 = \left(\sqrt{\frac{483826}{9874}}\right)^3 = \left(\sqrt{\frac{\cancel{2}x7^2x4937x1}{\cancel{2}x4937x1}}\right)^3 =$$

$$(\sqrt{7^2})^3 = 7^3 = \mathbf{343}$$

$$\mathbf{H)} \quad \sqrt{777924} - \sqrt{\sqrt{3111696}} - \sqrt{30 + \sqrt{1156}} + \sqrt{4624}$$

$$\sqrt{2^2x3^4x7^4x1} - \sqrt{\sqrt{2^4x3^4x7^4x1}} - \sqrt{30 + \sqrt{2^2x17^2}} + \sqrt{2^4x17^2}$$

$$2x9x49 - \sqrt{2^2x3^2x7^2} - \sqrt{30 + (2x17)} + 4x17$$

$$2x9x49 - 2x3x7 - \sqrt{30 + 34} + 4x17 = 882 - 42 - \sqrt{64} + 68 =$$

$$882 - 42 - 8 + 68 = \mathbf{900}$$