

Racionalización

9°

Factores de Racionalización

Factor a racionalizar	Multiplicar numerador y denominador por
1. \sqrt{a}	\sqrt{a}
2. $\sqrt[n]{a^k}$	$\sqrt[n]{a^{n-k}}$ si $n > k$
- $\sqrt[n]{a^k}$	$\sqrt[n]{a^{2n-k}}$ si $n < k$
3. $\sqrt{a} + \sqrt{b}$	$\sqrt{a} - \sqrt{b}$ que es el conjugado de $\sqrt{a} + \sqrt{b}$
4. $\sqrt{a} - \sqrt{b}$	$\sqrt{a} + \sqrt{b}$ que es el conjugado de $\sqrt{a} - \sqrt{b}$
5. $\sqrt[3]{a} + \sqrt[3]{b}$	$\sqrt[3]{a^2} - \sqrt[3]{ab} + \sqrt[3]{b^2}$
6. $\sqrt[3]{a} - \sqrt[3]{b}$	$\sqrt[3]{a^2} + \sqrt[3]{ab} + \sqrt[3]{b^2}$
7. $\sqrt[3]{a^2} - \sqrt[3]{ab} + \sqrt[3]{b^2}$	$\sqrt[3]{a} + \sqrt[3]{b}$
8. $\sqrt[3]{a^2} + \sqrt[3]{ab} + \sqrt[3]{b^2}$	$\sqrt[3]{a} - \sqrt[3]{b}$

I. Racionaliza el denominador y simplifica cuanto sea posible:

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|-----------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|--------------------------------------|
| 1. $\frac{5(a+b)}{10\sqrt{(a+b)^2}}$ | 2. $\frac{\sqrt{a}}{5\sqrt[3]{b}}$ | 3. $\frac{12(x^4-y^4)}{4\sqrt[5]{x^2-y^2}}$ | 4. $\frac{3a^2b}{5\sqrt[5]{a^3b^4}}$ |
| 5. $\frac{a-\sqrt{ab}-2b}{\sqrt{a}+\sqrt{b}}$ | 6. $\frac{2+2\sqrt{3}}{1+\sqrt{2}+\sqrt{3}}$ | 7. $\frac{2\sqrt{6}}{\sqrt{2}+\sqrt{3}-\sqrt{5}}$ | 8. $\frac{2}{1+\sqrt[3]{4}}$ |
| 9. $\frac{a^2-b^2}{\sqrt[3]{a}+\sqrt[3]{b}}$ | 10. $\frac{7ax(a+x)}{\sqrt[3]{a^2}-\sqrt[3]{ab}+\sqrt[3]{b^2}}$ | 11. $\frac{-9}{\sqrt{3}+\sqrt{11}} =$ | 12. $\frac{1+\sqrt{6}}{2\sqrt{3}}$ |

II. Racionalizar y simplificar si es posible

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|------------------------------------|---------------------------------------|---------------------------------|---------------------------------|
| 1. $\frac{2}{3\sqrt{2}}$ | 2. $\sqrt{2} + \frac{1}{\sqrt{2}}$ | 3. $\frac{-6}{\sqrt[5]{25}} =$ | 4. $\frac{-3}{\sqrt[6]{343}} =$ |
| 5. $\sqrt{2} + \frac{\sqrt{2}}{2}$ | 6. $\frac{11}{\sqrt{11}+\sqrt{10}} =$ | 7. $\frac{-2}{\sqrt[7]{125}} =$ | 8. $\frac{x-8}{\sqrt[3]{x-2}}$ |

9. $\frac{5}{\sqrt{6}+\sqrt{13}} =$

10. $\frac{11}{\sqrt{15}-\sqrt{6}} =$

11. $\frac{-8}{\sqrt{7}+\sqrt{11}} =$

12. $\frac{2}{\sqrt[5]{4}}$

13. $\frac{2}{\sqrt{2}-\sqrt{3}}$

14. $\frac{2}{4-2\sqrt{2}}$

15. $\frac{2\sqrt{2}}{5-2\sqrt{6}}$

16. $\frac{5}{2\sqrt{2}}$

17. $\frac{1}{\sqrt[3]{3}}$

18. $\frac{2}{3+\sqrt{3}}$

19. $\frac{\sqrt{2}}{\sqrt{3}-\sqrt{2}}$

20. $\frac{3\sqrt{2}-2\sqrt{3}}{3\sqrt{2}+2\sqrt{3}}$

21. $\frac{5}{\sqrt[3]{x-1}}$

22. $\frac{x-2}{\sqrt[3]{x-1}-1}$

23. $\frac{7}{5\sqrt{x-2}\sqrt{a}}$

24. $\frac{4}{\sqrt[3]{x+2}}$

III. Racionalizar y simplificar:

a) $\frac{4}{3\sqrt{2}}$

b) $\frac{4}{\sqrt{5}-\sqrt{3}}$

c) $\frac{5\sqrt{15}}{\sqrt{5}-\sqrt{2}}$

d) $\frac{\sqrt{5}}{\sqrt{7}}$

e) $\frac{1}{\sqrt[5]{3^2}}$

f) $\frac{5}{\sqrt[3]{2}}$

g) $\frac{4}{\sqrt{3}+\sqrt{2}}$

h) $\frac{3}{2\sqrt{3}}$

i) $\frac{3}{1+\sqrt{7}}$

j) $\frac{23}{5-\sqrt{2}}$

k) $\frac{1+\sqrt{3}}{1-\sqrt{3}}$

l) $\frac{3}{\sqrt[3]{5}}$

m) $\frac{2\sqrt{2}+3\sqrt{6}}{2+3\sqrt{3}}$

n) $\frac{3}{\sqrt{15}}$

ñ) $\frac{\sqrt{2}+\sqrt{3}}{\sqrt{2}-\sqrt{3}}$

o) $\frac{2}{\sqrt{3}-1}$

o) $\frac{2}{\sqrt{5}-3}$

p) $\frac{3\sqrt{27}}{\sqrt{3}}$

q) $\frac{3}{1+\sqrt{7}}$

r) $\frac{3}{2\sqrt{3}}$

s) $\frac{1}{\sqrt{x}-\sqrt{y}} + \frac{1}{\sqrt{x}+\sqrt{y}}$

t) $\frac{2\sqrt{3}}{\sqrt{2}-3\sqrt{3}}$

u) $\frac{3-\sqrt{2}}{3+\sqrt{2}}$

v) $\frac{\sqrt{2}}{\sqrt{7}-\sqrt{5}-\sqrt{3}}$