(d)

Departamento de Matemáticas 4º Académicas

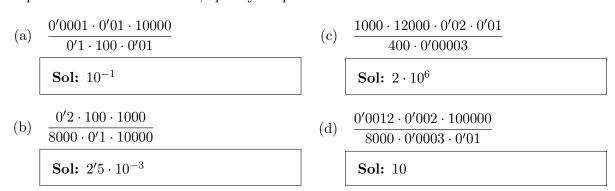


Potencias y Radicales

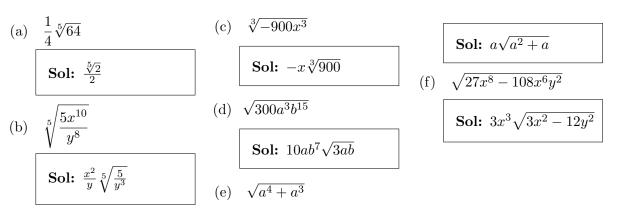
1. Reduce lo que puedas:

(a)
$$\frac{(-2 \cdot 3)^{2} \cdot (3^{2} \cdot 2)^{3}}{(2^{3} \cdot 3 \cdot 2^{-1})^{2}}$$
(b)
$$\frac{4^{-2} \cdot 9 \cdot 2^{3} \cdot 3^{-2}}{(2 \cdot 3)^{2} (3^{-1} \cdot 8)^{-2}}$$
(c)
$$\frac{-a^{-3} \cdot a^{5} \cdot a^{2}}{(a \cdot a^{3})^{2} (-a^{3})^{-5} \cdot a^{-2}}$$
(d)
$$\frac{64 \cdot (x^{2}y^{-1})^{-2}}{24 \cdot (x^{-1}2y)^{3}}$$
(e)
$$\frac{(a) \frac{1}{3xy}}{(a \cdot a^{3})^{2}}$$
(f)
$$\frac{(a) \frac{64 \cdot (x^{2}y^{-1})^{-2}}{24 \cdot (x^{-1}2y)^{3}}$$
(e)
$$\frac{(a^{3}b^{2})^{-1} : \left(\frac{3a^{2}b}{4}\right)^{4}}{\left(\frac{3a^{2}b}{4}\right)^{4}}$$
(g)
$$\left[\frac{2a^{3}b^{-2}}{(3ab^{-1})^{-1}}\right]^{-2} : \left[\frac{a^{-2}b^{2}}{6a^{2}}\right]^{3}$$
(d)
$$\frac{64 \cdot (x^{2}y^{-1})^{-2}}{24 \cdot (x^{-1}2y)^{3}}$$
(e)
$$\frac{(a^{3}b^{2})^{-2} : b^{-5}}{(a^{-2})^{-\frac{1}{2}}}$$
(g)
$$\left[\frac{2a^{3}b^{-2}}{(3ab^{-1})^{-1}}\right]^{-2} : \left[\frac{a^{-2}b^{2}}{6a^{2}}\right]^{3}$$
(g)
$$\frac{(a^{3}b^{2})^{-2} : b^{-5}}{(a^{-2})^{-\frac{1}{2}}}$$
(h)
$$\frac{(a^{3}b^{2})^{-2} : b^{-5}}{(a^{-2})^{-\frac{1}{2}}}$$
(g)
$$\frac{(a^{3}b^{2})^{-2} : b^{-5}}{(a^{-2})^{-\frac{1}{2}}}$$

2. Expresa en notación científica, opera y simplifica:



3. Extrae los factores que puedas:



4. Introduce los factores en el radical:

(a)
$$\frac{3}{5}\sqrt{\frac{5}{3}}$$

Sol:
$$\sqrt{\frac{3}{5}}$$

(b)
$$2x^3\sqrt{6x}$$

Sol:
$$\sqrt{24x^7}$$

(c)
$$5x\sqrt[3]{x}$$

Sol:
$$\sqrt{125x^4}$$

$$(d) \quad \frac{1}{2}x^2y\sqrt[3]{\frac{2}{xy}}$$

Sol:
$$\sqrt[3]{\frac{x^5y^2}{4}}$$

(e)
$$2xy^2 \sqrt[3]{x^2y}$$

Sol:
$$\sqrt[3]{8x^5y^7}$$

(f)
$$(x+y)\sqrt{\frac{x-y}{x+y}}$$

Sol:
$$\sqrt{x^2 - y^2}$$

5. Opera y simplifica:

(a)
$$2\sqrt{3} \cdot 3\sqrt{2} \cdot 5\sqrt{6}$$

Sol: 180

(b)
$$\sqrt[3]{81} : \sqrt[3]{9}$$

Sol: $\sqrt[3]{9}$

(c)
$$\frac{\sqrt{2ab^2} \cdot \sqrt{4a^2b}}{\sqrt{2a^3b}}$$

Sol: 2*b*

(d)
$$\sqrt{2}\sqrt[3]{2}\sqrt[4]{2}$$

Sol: $2\sqrt[12]{2}$

(e) $\sqrt{2ab}\sqrt{4a^2b}\sqrt[6]{2a^5b^5}$

Sol: $2a^2b\sqrt[6]{a^2b^5}$

(f)
$$\sqrt[4]{\frac{ac^5}{b}} \sqrt[8]{\frac{a^6b^5}{c^2}}$$

Sol: $ac\sqrt[8]{b^3}$

(g)
$$\sqrt[4]{x^3y^2} : \sqrt{xy}$$

Sol: $\sqrt[4]{x}$

(h)
$$\frac{\sqrt{8a^2b}\sqrt[3]{9ab^2}}{\sqrt[6]{2a}}$$

Sol: $2ab\sqrt[6]{36b^5}$

(i)
$$\sqrt[5]{3^2} \cdot \sqrt[8]{2^5} \cdot \sqrt[4]{5^3}$$

Sol: $\sqrt[40]{2^{25} \cdot 3^{16} \cdot 5^{30}}$

(j)
$$\sqrt[8]{4} \cdot \sqrt[6]{16} \cdot \sqrt[12]{8^5}$$

Sol: $4\sqrt[6]{2}$

(k)
$$\sqrt{x\sqrt[3]{y}}$$

Sol: $\sqrt[6]{x^3y}$

$$(3) \quad \sqrt[4]{x^3y^2} : \sqrt{xy}$$

(m)
$$\sqrt[4]{a\sqrt[3]{a}} \cdot \sqrt{a\sqrt{a}} \cdot \sqrt[6]{a^5\sqrt{a^5}}$$

 $\sqrt[6]{2a}$

 $\sqrt[3]{\frac{a}{b}}\sqrt{\frac{b}{a}}$

Sol: $\sqrt[6]{\frac{a}{b}}$

(n)
$$\sqrt{a\sqrt[3]{\frac{2b}{a}} \cdot \sqrt[3]{\frac{2}{a}}\sqrt{\frac{1}{2b}}}$$

Sol: $a^2 \sqrt[3]{a}$

Sol: $\sqrt[3]{2}$

$$(\tilde{n}) \quad \sqrt[3]{\sqrt[3]{\frac{1}{3}\sqrt{3^3}}}$$

Sol: $\sqrt[18]{3}$

(o)
$$\sqrt{3a^2 + \sqrt{6a^4 - \sqrt{25a^8}}}$$

Sol: 2*a*

6. Calcula las siguientes sumas:

(a)
$$3\sqrt{2} - 5\sqrt{8} + 7\sqrt{32}$$

Sol: $21\sqrt{2}$

(b)
$$\frac{5}{6}\sqrt{27} + 4\sqrt{75} - \frac{3}{4}\sqrt{48} - \frac{5}{4}\sqrt{12}$$

Sol: $17\sqrt{3}$

(c)
$$\sqrt{98} + \sqrt{18} + \sqrt{8}$$

Sol: $12\sqrt{2}$

(d) $\sqrt{45x^3} + \sqrt{5x^2y} - \sqrt{80x^3}$

Sol: $x\sqrt{5y} - x\sqrt{5x}$

(e) $\frac{1}{2}\sqrt{12} + \frac{1}{3}\sqrt{27} + \frac{1}{5}\sqrt{75}$

Sol: $3\sqrt{3}$

(f) $\sqrt{8b^3} - \sqrt{18b^3} + \sqrt{128b^5}$

Sol: $(8b^2 - b)\sqrt{2b}$

(g) $\sqrt[3]{54} - 2\sqrt[3]{16}$

Sol: $-\sqrt[3]{2}$

 $(h) \quad \sqrt{\frac{1}{3}} + \sqrt{27}$

Sol: $\frac{4}{3}\sqrt{3}$

(i) $x\sqrt{4(3x+1)} - \sqrt{27x^3 + 9x^2} + \sqrt{3x^3 + x^2}$

Sol: 0

- 7. Calcula, racionalizando si fuera necesario::
 - (a) $\frac{3}{\sqrt{3}}$

Sol: $\sqrt{3}$

(c) $\frac{1}{\sqrt{2}-1}$

Sol: $\sqrt{2} + 1$

(e) $\frac{6}{\sqrt[4]{4}}$

Sol: $3\sqrt{2}$

(b) $\frac{2}{\sqrt[3]{7}}$

Sol: $\frac{2\sqrt[3]{7^2}}{7}$

(d) $\frac{6}{\sqrt{2}-1}$

Sol: $3\sqrt{3} + 3$

 $(f) \quad \frac{\sqrt{6} + \sqrt{3}}{\sqrt{6} - \sqrt{3}}$

Sol: $3 + 2\sqrt{2}$