

1.- Calcula x:

- a) $\log_3 81 = x$
- b) $\log_5 0,2 = x$
- c) $\log_6 [4(x-1)] = 2$
- d) $\log_8 [2(x^3+5)] = 2$

$$a) \log_3 81 = x$$

$$3^x = 81$$

$$3^x = 3^4$$

$$x = 4$$

$$b) \log_5 0,2 = x$$

$$5^x = 0,2$$

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

$$5^x = 5^{-1}$$

$$x = -1$$

$$c) \log_6 [4(x-1)] = 2$$

$$\log_6 (4x-4) = 2$$

$$6^2 = 4x-4$$

$$36 = 4x-4$$

$$40 = 4x$$

$$x = 10$$

$$d) \log_8 [2(x^3+5)] = 2$$

$$\log_8 (2x^3+10) = 2$$

$$8^2 = 2x^3+10$$

$$64 = 2x^3+10$$

$$54 = 2x^3$$

$$x^3 = 27$$

$$x = \sqrt[3]{27} = 3$$

2.- Calcula el valor de las siguientes expresiones:

a) $\log_2 \frac{\sqrt[6]{64} \cdot 4^2}{2^5 \cdot \sqrt[3]{512}}$

b) $\log_3 \frac{27 \cdot \sqrt{729}}{81 \cdot \sqrt[3]{27}}$

$$a) \log_2 \frac{\sqrt[6]{64} \cdot 4^2}{2^5 \cdot \sqrt[3]{512}} = \log_2 \frac{2^{6/6} \cdot (2^2)^2}{2^5 \cdot 2^{9/3}} = \log_2 \frac{2 \cdot 2^4}{2^5 \cdot 2^3} = \log_2 \frac{1}{2^3} = \log_2 2^{-3} = \underline{-3}$$

$$b) \log_3 \frac{27 \cdot \sqrt{729}}{81 \cdot \sqrt[3]{27}} = \log_3 \frac{3^3 \cdot 3^{6/2}}{3^4 \cdot 3^{3/3}} = \log_3 \frac{3^3 \cdot 3^3}{3^4 \cdot 3} = \log_3 3 = \underline{1}$$