

LOGARITMOS

Problema 100:

Calcular:

$$\log\sqrt{3x+1} - \log\sqrt{2x-3} = 1 - \log 5$$

Solución Problema 100:

Aplicando las propiedades de los logaritmos:

$$\log\sqrt{3x+1} - \log\sqrt{2x-3} = 1 - \log 5$$

$$\log \frac{\sqrt{3x+1}}{\sqrt{2x-3}} = \log 10 - \log 5$$

$$\log \frac{\sqrt{3x+1}}{\sqrt{2x-3}} = \log 10 - \log \frac{10}{2}$$

$$\log \frac{\sqrt{3x+1}}{\sqrt{2x-3}} = \log 10 - (\log 10 - \log 2)$$

$$\log \frac{\sqrt{3x+1}}{\sqrt{2x-3}} = \log 10 - \log 10 + \log 2$$

$$\log \frac{\sqrt{3x+1}}{\sqrt{2x-3}} = \log 2$$

Al haber logaritmos en los dos miembros de la igualdad podemos suprimirlos:

$$\frac{\sqrt{3x+1}}{\sqrt{2x-3}} = 2$$

$$\sqrt{\frac{3x+1}{2x-3}} = 2$$

$$\left(\sqrt{\frac{3x+1}{2x-3}}\right)^2 = 2^2$$

$$\frac{3x + 1}{2x - 3} = 4$$

$$3x + 1 = 4 \cdot (2x - 3)$$

$$3x + 1 = 8x - 12$$

$$3x - 8x = -12 - 1$$

$$-5x = -13$$

$$x = \frac{-13}{-5} = \frac{13}{5}$$