

Precalculus

Basic exponent equation of type $e^{px+q} = Ae^{rx+s}$

Todor Milev

2019

Example

Solve the equation.

$$e^{x-3} = 2e^{2x-1}$$

Divide by e^{2x-1}

$$\frac{e^{x-3}}{e^{2x-1}} = 2$$

$$e^{x-3-(2x-1)} = 2$$

$$e^{-x-2} = 2$$

Apply \ln

$$-x - 2 = \ln 2$$

$$-x = \ln 2 + 2$$

$$x = -(\ln 2 + 2)$$

$$x = -\ln 2 - 2$$

Final answer

$$x \approx -2.693$$

Calculator