Precalculus

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

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

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

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Solve the equation.

$$e^{x-3} = 2e^{2x-1}$$
 Divide $\frac{e^{x-3}}{e^{2x-1}} = 2$ $e^{x-3-(2x-1)} = 2$ $e^{-x-2} = 2$ Apply $-x-2 = \ln 2$ $-x = \ln 2 + 2$

Apply In

$$e^{x-3} = 2e^{2x-1}$$
 Divide by e^{2x-1}
 $\frac{e^{x-3}}{e^{2x-1}} = 2$
 $e^{x-3-(2x-1)} = 2$
 $e^{-x-2} = 2$ Apply In
 $-x-2 = \ln 2$
 $-x = \ln 2 + 2$
 $x = -(\ln 2 + 2)$

$$e^{x-3}=2e^{2x-1}$$
 Divide by e^{2x-1} $\frac{e^{x-3}}{e^{2x-1}}=2$ $e^{x-3-(2x-1)}=2$ $e^{-x-2}=2$ Apply In $-x-2=\ln 2$ $-x=\ln 2+2$ $x=-(\ln 2+2)$ $x=-\ln 2-2$ Final answer

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 Divide by e^{2x-1} $\frac{e^{x-3}}{e^{2x-1}}=2$ $e^{x-3-(2x-1)}=2$ $e^{-x-2}=2$ Apply In $-x-2=\ln 2$ $-x=\ln 2+2$ $x=-(\ln 2+2)$ $x=-\ln 2-2$ Final answer $x\approx -2.693$ Calculator