Input:

$$\log(1+\exp(-2\tanh^{-1}(\cos(2t)))) + 2\times\frac{\tanh^{-1}(\cos(2t))}{\exp(2\tanh^{-1}(\cos(2t)))+1} - \left(-\frac{1}{2}(1-\cos(2t))\log\left(\frac{1}{2}(1-\cos(2t))\right) - \frac{1}{2}(1+\cos(2t))\log\left(\frac{1}{2}(1+\cos(2t))\right)\right)$$

$\tanh^{-1}(x)$ is the inverse hyperbolic tangent function

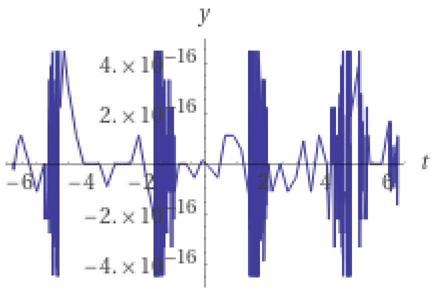
$\log(x)$ is the natural logarithm

Exact result:

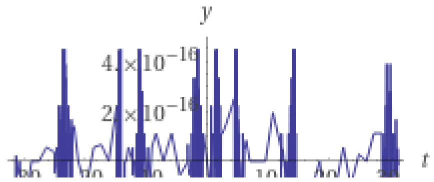
Enlarge Data Customize Plain Text

$$\frac{1}{2}(1-\cos(2t))\log\left(\frac{1}{2}(1-\cos(2t))\right) + \frac{1}{2}(\cos(2t)+1)\log\left(\frac{1}{2}(\cos(2t)+1)\right) + \frac{2\tanh^{-1}(\cos(2t))}{e^{2\tanh^{-1}(\cos(2t))}+1} + \log\left(e^{-2\tanh^{-1}(\cos(2t))}+1\right)$$

Plots:



(t from -6.3 to 6.3)



(t from -31.4 to 31.4)

Alternate forms:

More

$$\sin^2(t)\log(\sin^2(t)) + \cos^2(t)\log(\cos^2(t)) + \frac{2\tanh^{-1}(\cos(2t))}{e^{2\tanh^{-1}(\cos(2t))}+1} + \log\left(e^{-2\tanh^{-1}(\cos(2t))}+1\right)$$

$$\left(\frac{1}{2}\cos(2t)+\frac{1}{2}\right)\log(\cos^2(t)) + \frac{2\tanh^{-1}(\cos(2t))}{e^{2\tanh^{-1}(\cos(2t))}+1} + \left(\frac{1}{2}-\frac{1}{2}\cos(2t)\right)\log(\sin^2(t)) + \log\left(e^{-2\tanh^{-1}(\cos(2t))}\left(e^{2\tanh^{-1}(\cos(2t))}+1\right)\right)$$

$$\left((\cos(2t)+1)\log(\cos^2(t))\left(e^{2\tanh^{-1}(\cos(2t))}+1\right) + 2\left(2\tanh^{-1}(\cos(2t)) + \left(e^{2\tanh^{-1}(\cos(2t))}+1\right)\log\left(e^{-2\tanh^{-1}(\cos(2t))}\left(e^{2\tanh^{-1}(\cos(2t))}+1\right)\right)\right) - (\cos(2t)-1)\log(\sin^2(t))\left(e^{2\tanh^{-1}(\cos(2t))}+1\right)\right) \Big/ \left(2\left(e^{2\tanh^{-1}(\cos(2t))}+1\right)\right)$$