

$$\textcircled{5} \int_{-e^2}^{-e} \frac{1}{t} dt = \ln |t| \Big|_{-e^2}^{-e}$$

$$= \ln |-e| - \ln |-e^2|$$

$$= \ln e - \ln e^2 = 1 - 2 = -1$$

$$\textcircled{6} \int_e^{e^2} \frac{1}{t \ln t} dt$$

$$u = \ln t$$
$$du = \frac{1}{t} dt$$

$$\int \frac{1}{u} du = \ln u \Big|_1^2 = \ln 2 - \ln 1$$
$$= \ln 2$$

$$\textcircled{9} \int_{-2}^{-2/\sqrt{3}} \frac{dx}{|x| \sqrt{x^2-1}} = \sec^{-1} x \Big|_{-2}^{-2/\sqrt{3}}$$

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

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

$$\frac{5\pi}{6} - \frac{2\pi}{3} = \frac{\pi}{6}$$

$$\sec x = \frac{1}{\cos x}$$

$$\sec^{-1} x = \cos^{-1} \left( \frac{1}{x} \right)$$

fg

$$\int_0^{1.054} \ln x - (e^x - 2) dx$$

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$$\int_2^x f(t) dt$$

$$\int_2^0 f(t) dt - \int_0^2 f(t) dt$$