Let

$$f(x) = \cos(x) - \sin(x)$$
$$g(x) = 4e^x - 3\cos(x+1) - \tfrac{1}{x}$$
$$h(x) = 3\sin(4) + 2\sin(3x) - \ln(x) + x^{732}$$

1. Find the derivatives of each function.
2. Now find the antiderivative of each of the original functions.
   Check your answer by taking the derivative!
3. Find the maximum and minimum values of $f(x)$ on the interval $[-\pi, \pi]$.

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