Circle True or False. (1 point for correct answer, 0 if incorrect)

1. True   False   Every function has only one antiderivative.

2. True   False   The only way to calculate the integral $\int_0^1 x\,dx$ is by using an antiderivative of x.

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points)   (a) (4 points) Find $\dfrac{d}{dx}\displaystyle\int_x^{x^2} \sqrt{1-x}\,dx$.

(b) (3 points) Find $\displaystyle\int \sin^4(x)\cos(x)\,dx$.

(c) (3 points) Find $\displaystyle\int \dfrac{\ln x}{x^3}\,dx$.