Name: _____ Mark: _____

Mini-math AP Calculus BC: Friday, March 11, 2022 (8 minutes)

1. (2 points) Write down (but do not evaluate) an integral which represents the length of the curve $y = \sin x^2$ from $x = 0$ to $x = \pi$.

2. (2 points) Suppose $g(x) = \int_x^{x^2} \sqrt{t^3 + 1}\, dt$. Write down (but do not evaluate) an integral which represents the length of the curve $y = g(x)$ from $x = 0$ to $x = 1$.

3. (2 points) Write down (but do not evaluate) an integral which represents the length of the curve described by the parametric equations $x = \cos t$ and $y = \sin 2t$ from $t = 0$ to $t = \pi$.

4. (2 points) Write down (but do not evaluate) an integral which represents the length of the curve described by the parametric equations $x = t^3/3$ and $y = t^2/2$ from $t = 0$ to $t = 1$. (Extra challenge: find the exact value.)