

CALCULUS

MINI EXAM 4

NAME: _____

ID: _____

SCORE: _____ / 80

RULES:

- You have 30 minutes to complete the exam.
- There are 8 questions and 80 points in total.
- You can use a non-graphing calculator.
- If you need to go to the restroom, please turn in your cellphone before.
- If you need hints, 1 hint is worth 3 points.

Evaluate the following. Use any knowledge you have gained to do. One problem may have many approaches, some shorter than others.

(1)

$$\frac{d}{dx} \int_0^{x^2} \cos(t^2 - e^{-t^2}) dt$$

(2)

$$\frac{d}{dx} \left(e^x \int_0^{2x} t^2 dt \right)$$

(3)

$$\frac{d}{dx} \sin \left(\int_0^{\sqrt{x}} t^2 dt \right)$$

(4)

$$\int \sin^7(\theta) \cos(\theta) d\theta$$

(5)

$$\int_0^{\infty} x e^{-x^2} dx$$

(6)

$$\int x e^x dx$$

(7)

$$\int e^x \sin x \, dx$$

(8)

$$\int_0^2 (1 - |x - 1|) \, dx + \int_2^6 \sqrt{-12 + 8x - x^2} \, dx$$