Name: $\underline{\text{SOLUTIONS}}$

1. Radioactive iodine is ued by doctors to diagonize thyroid gland disorders. This type of iodine decays such that the mass reamining after t days is given by

$$m(t) = 6e^{-0.087t}$$

where $m(t)$ is measured in grams.

- Find the mass at time $t = 0$.

- How much of the mass remainds after 20 days ?

$$m(0) = 6 e^0 = 6 \text{ gms}$$

$$m(20) = 6 e^{-0.087 \times 20} = 1.05312 \text{ gms}$$

2. You want to invest $\$40,000$ in an account offering the following options:

- 8.5% per year, compunded semiannually.

- 8.25% per year, compounded quarterly.

- 8% per year, compounded daily.

Answer: 8.5% per year compounded semiannually

Which option would you choose to maximize your investment after 2 years. (Use back side of the paper if needed).

Time	n	r	r/n	A(2)
Semiannual	2	$\frac{8.5}{100}$	$\frac{0.085}{2}$	$40000\left(1 + \frac{0.085}{2}\right)^{2 \times 2} = \$47245.91$
Quarter	4	$\frac{8.25}{100}$	$\frac{0.0825}{4}$	$40000\left(1 + \frac{0.0825}{4}\right)^{4 \times 2} = \$47096.61$
Daily	365	$\frac{8}{100}$	$\frac{0.08}{365}$	$40000\left(1 + \frac{0.08}{365}\right)^{365 \times 2} = \$46939.61$