Assignment 1

Instructor: Jiguo Cao

Instructions: It is due at 3:30pm, Friday, June 15, 2018.

1. Below is the melanoma data from the Connecticut Tumor Registry present age-adjusted numbers of melanoma skin-cancer incidences per 100,000 people in Connectict for the years from 1936 to 1972. Please estimate the underlying incidence as a function of year.

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> library(fda)
> melanoma
year incidence
1   1936       0.9
2   1937       0.8
3   1938       0.8
4   1939       1.3
5   1940       1.4
6   1941       1.2
7   1942       1.7
8   1943       1.8
9   1944       1.6
10  1945       1.5
11  1946       1.5
12  1947       2.0
13  1948       2.5
14  1949       2.7
15  1950       2.9
16  1951       2.5
17  1952       3.1
18  1953       2.4
19  1954       2.2
20  1955       2.9
21  1956       2.5
22  1957       2.6
23  1958       3.2
24  1959       3.8
25  1960       4.2
26  1961       3.9
27  1962       3.7
28  1963       3.3
29  1964       3.7
30  1965       3.9
31  1966       4.1
32  1967       3.8
33  1968       4.7
34  1969       4.4
35  1970       4.8
36  1971       4.8
37  1972       4.8
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(a) (10') Provide the graph of the estimated incidence function along with the original data.

(b) (10') Provide the graph of the first and second derivative of the estimated incidence function.