King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics — Spring Semester (Term 162)

Sexond Major Exam — MATH 132 — Dr. Taleb Alkurdi

Name_____ ID_____ Serial Number _____

Important Note: Please show your work in order to get the full grade. There is only one point for the final answer and the rest will be for the details of the work.

Question Number	Points	Maximum Points
1		**8**
2		**7**
3		**7**
4		**7**
5		**7**
6		**7**
7		**10**
8		**7**
9		**10**
10		**30**
Total		**100**

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

1) If $\frac{dy}{dx} = x^2 - 4x + 1$ and $y(3) = 8$, find y. 1) _____

2) Determine: $\int x^2(2x^3 - 5)^4\,dx$ 2) _____

3) Determine: $\int 4^{s+1}\,ds$ 3) _____

4) Determine: $\int \frac{z^2 - 3z + 5}{z + 2}\,dz$ 4) _____

5) Determine: $\int_1^4 x\sqrt{x}\,dx$ 5) _____

6) Determine: $\int_{\sqrt{2}}^2 \frac{3x}{x^2 - 1}\,dx$ 6) _____

7) Evaluate: $\int_5^{11} \frac{e \ln x}{x}\,dx$ 7) _____

8) Suppose $\int_1^6 f(x)\,dx = 9$; $\int_6^4 f(x)\,dx = 4$, then find $\int_1^4 f(x)\,dx$. 8) _____

9) Find the area of the region bounded by the curves $y = x^2$ and $y = x + 2$ from $x = 1$ to $x = 2$. 9) _____

10) Let $y = x^4 - 4x^3$. 10) _____

(a) Determine y' and y''.

(b) Determine intervals on which the function is increasing; determine intervals on which the function is decreasing.

(c) Determine the coordinates of all relative maximum and relative minimum points.

(d) Determine intervals on which the function is concave up; determine intervals on which the function is concave down;

(e) Determine the coordinates of all inflection points.

(f) With the aid of the information obtained in parts (a)-(e), give a reasonable sketch of the curve.