KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DEPARTMENT OF MATHEMATICS & STATISTICS

Term 172

MATH102: Calculus II
Class Test #2

Sunday, 1 April 2018
1:00 PM - 2:00 PM

Name:_____

ID #:_____

Serial#:_____

Evaluate the following integrals:

1. $\displaystyle \int \frac{e^{2x}}{1 + e^{4x}} dx$

2. $\displaystyle \int \tan^5\theta \, \sec^3\theta \, d\theta$

3. $\displaystyle \int \frac{dx}{\sqrt{x^2 - 4x}}$

4. $\displaystyle\int \frac{dx}{x\sqrt{x^2+1}}$

5. $\displaystyle\int_0^{\frac{\pi}{2}} \cos^3\theta\,\sin2\theta\,d\theta$

6. $\displaystyle\int (\tanh^4 x - \tanh^2 x)\,dx$

7. $\displaystyle\int \frac{\sqrt[3]{x}+1}{\sqrt[3]{x}-1}\,dx$

8. $\displaystyle\int e^{\sqrt[3]{x}}\,dx$

9. $\displaystyle\int \frac{4x+5}{x^3+4x^2+5x}\,dx$

10. Find the number b such that the average value of $f(x) = 2 - 6x - 3x^2$ on the interval [0,b] is equal to 3.

11. Use the method of cylindrical shells to find the volume of the solid obtained by rotating the region bounded by the given curves about the x-axis:

$$x + y = 3, \quad x = 4 - (y - 1)^2$$