**King Saud University**

**Department of Mathematics**

**Math 106: Integral Calculus**

**Trimester 1: 1444**

[N. B.: Questions should be solved during tutorial]

**Book**: **Calculus by Swokowski, Olinick, Pence (Sixth Edition)**

**SectionsTopics Exercises**

**4.1**. Anti-derivatives and indefinite integrals: 1,5,7,11,14,15,17,23,27,29,35,41,43,49

**4.2**. Change of variables in indefinite integrals:1,3,5,7,9,16,20,21,27,32,37

**4.3**. Summation notation and area:1,2,3,5,6,9,12,27,37

**4.4**. The definite integral:1,5,10,11,15,16,19,20,31,33,37

**4.5**. Properties of definite integral:7,10,11,15,17,22,23,25,29,34

**4.6**. The fundamental theorem of calculus 1,7,8,9,11,12,13,15,17,21,29,32,36,45,47

**4.7**. Numerical integration: 15,16,17,18,33,34

**6.2** The natural logarithm function: 3, 5,9,11,32,35,39,41,42

**6.3**.The exponential function:1,3,6,11,15,31,33

**6.4**. Integration using natural logarithm and exponential function: 1,3,6,11,15,18,19,30,3

**6.5**. General exponential function and logarithm function:1,5,15,17,23,29,37,39,41,4

**6.7**.Inverse trigonometric functions:31,33,37,43,51,52,56,57,60,61,62

**6.8**.Hyperbolic and inverse hyperbolic functions:19,20,21,28,29,61,63,65,67,73,74,75,79,80

**6.9**. Indeterminate forms and L’Hopital’s rule:49,51,57,58,59,64,65,74,76

**7.1**. Integration by parts:1,2,7,11,12,13,16,17,31

**7.2**.Trigonometric integrals:1,3,4,5,7,9,11,13,15

**7.3**. Trigonometric substitutions: 1,3,5,7,9,10,21,22

**7.4**. Integrals of rational functions (Partial fractions): 1.2.5,6,9,11,25

**7.5**. Quadratic expressions and miscellaneous substitutions:1,3,5,6,10,12,25,26,27,28,32,47,48,49,50

**7.7**. Improper integrals :1,2,4,7,13,14,15,17

**5.1**. Area between curves:5,6,9,10,11,12,14,27,28,31

**5.2**. Volume (by disk or washer method):5,6,8,9,21,25

**5.3**.Volume (by Cylindrical shells method):5,6,7,11,13,15,17,19,21

**5.5**. Arc length and surface of revolution: 5,7,11,12,13,29,30,32,35,36,42

**9.1**. Parametric equations: 1,3,5,7,25

**9.2** .Arc length and surface area: 1,5,7,9,21,29,31,33,35,37

**9.3**.Polar coordinates:1,2,3,5,7,9,27,31,33,37,38,51,53,59

**9.4**.Integrals in polar coordinates:1,3,18,19,22,23,27,30,35,37

**Midterm**: date to be determined.