

# Computational Mathematics/Information Technology

## Solutions to Worksheet 8

### Numerical Integration and Minitab

#### Numerical Integration.

1. From Problem 1, what is the sum? 55

[1 mark]

2. From Problem 2 complete the table

$N$	Estimate of integral	Error $\times N^2$
1	0.7500000	0.035398
2	0.7750000	0.041593
4	0.7827941	0.041665
16	0.7852354	0.041667
64	0.7853880	0.041667
256	0.7853975	0.041668
1024	0.7853981	0.041731
4096	0.7853982	0.041907

[3 marks]

3. For problem 3 complete the tables

$N$	Estimate of integral	Error of estimate
1	0.5	0.166667
2	0.75	0.083333
4	0.675	0.008333
8	0.666768	0.000102
16	0.6666666821	$1.543 \times 10^{-8}$
32	0.666666666...	$3.597 \times 10^{-16}$

$N$	Number of leading 6s in estimate
4	1
8	3
16	7
32	14
64	29
128	60
256	121

[2 marks]

[2 marks]

#### Minitab.

Complete the following table based on the data on marks:

Data	N	Min	$Q_1$	Med	$Q_3$	Max
Total	108	14.00	62.00	85.00	93.00	99.00
Math	23	14.00	56.00	74.00	92.00	98.00
Act Sci	85	20.00	63.00	87.00	93.00	99.00

[2 marks]