

Simon Fraser University

MATH 152 Term Test 2

July 7, 2004

Name (please print): _____
Last name Given names

Student Number: _____

Signature: _____

NOTES:

- Show all workings. No credit will be given for unsupported answers.
- The use of *any* calculator is strictly prohibited.
- You have 50 minutes to complete the examination.
- No notes or aids are permitted during the examination.
- Ensure that your examination contains 6 pages (including this cover page) with 4 questions.

DO NOT WRITE BELOW THIS LINE

Question	Marks	Score
#1	17	
#2	4	
#3	5	
#4	4	
TOTAL	30	

1. Integrate.

[17]

a) $\int \frac{\tan^3 x}{\sqrt{\sec x}} dx$

[4]

b) $\int_1^2 \frac{x+1}{x^3+x} dx$

[5]

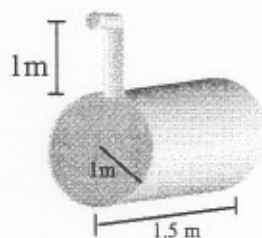
c) $\int_1^2 \frac{1}{\sqrt{2x-x^2}} dx$

[5]

d) $\int \frac{\ln x}{x^3} dx$

[3]

2. A cylindrical gas tank 1 metre in diameter and 1.5 metres in length is used to fuel tractors. Set up (but do not evaluate) an integral to determine how much work is done in pumping the entire contents of the full fuel tank into a tractor if the opening in the tractor tank is 1 metre above the top of the fuel tank. (Assume that the fuel weighs 6800 N/m^3) [4]



3. Find the area of the region inside the circle $r = 2 \cos \theta$ and outside the circle $r = 1$.

[5]

4. Find the particular solution to $y\sqrt{1-x^2} \frac{dy}{dx} - x\sqrt{1-y^2} = 0$, $y(0) = 1$

[4]