Dawson College: Calculus II (SCIENCE): 201-NYB-05-S2: Winter 2012

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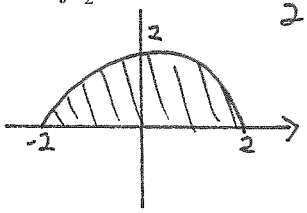
Quiz 3

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. *(2 marks)* §5.2 #32 Evaluate the integral by interpreting it in terms of areas.

$\int_{-2}^{2} \sqrt{4-x^2}\,dx = \frac{\pi r^2}{2} = \frac{\pi 2^2}{2} = 2\pi$



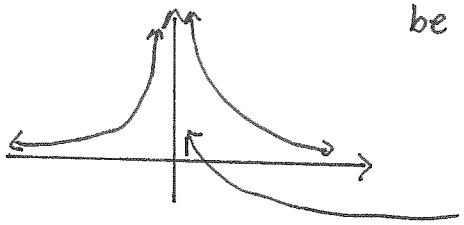
Question 2. *(2 marks)* §5.2 #37 Given that $\int_4^9 \sqrt{x}\,dx = \frac{38}{3}$, what is $\int_9^4 \sqrt{t}\,dt$?

$= -\int_4^9 \sqrt{t}\,dt = -\int_4^9 \sqrt{x}\,dx = -\frac{38}{3}$

Question 3. *(2 marks)*§5.3 #29 What is wrong with the equation?

$\int_{-1}^{3} \frac{1}{x^2}\,dx = \left[\frac{x^{-1}}{-1}\right]_{-1}^{3} = -\frac{4}{3}$

To use the 1st FTC the integrand must be continuous on the interval of integration.



infinite discontinuity at $x=0$.

Question 4. *(4 marks)*§5.3 #14 Evaluate the integral.

$\int_1^9 \frac{3x-2}{\sqrt{x}}\,dx = \int_1^9 \frac{3x}{\sqrt{x}} - \frac{2}{\sqrt{x}}\,dx$

$= \int_1^9 3\sqrt{x} - 2x^{-1/2}\,dx$

$= \left[\frac{2}{5}x^{3/2} - 4x^{1/2}\right]_1^9$

$= \left[29^{3/2} - 49^{1/2}\right] - \left[21^{3/2} - 41^{1/2}\right]$

$= [54 - 12] - [2 - 4]$

$= 44$