Dawson College: Calculus II (SCIENCE): 201-NYB-05-S09: Winter 2013

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Quiz 9

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.

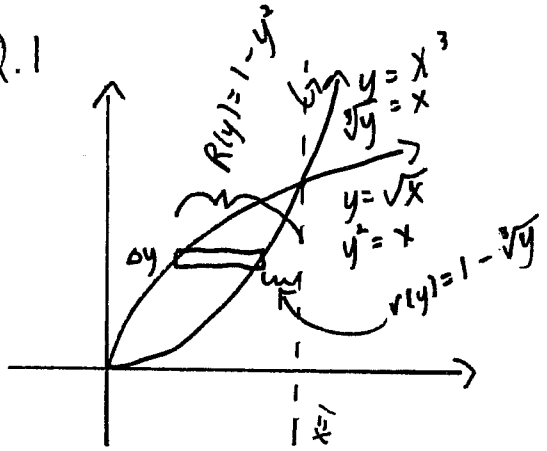
Question 1. *(5 marks)* §7.2 #17 The region enclosed by the given curves is rotated about the specified line. Find the volume of the resulting solid.

$y = x^3$, $y = \sqrt{x}$; about $x = 1$

Question 2. *(5 marks)* §7.3 #24 Set up an integral for the volume of the solid obtained by rotating the region bounded by the given curves about the specified axis.

$y = x$, $y = 2x/(1+x^3)$; about $x = -1$

Q.1

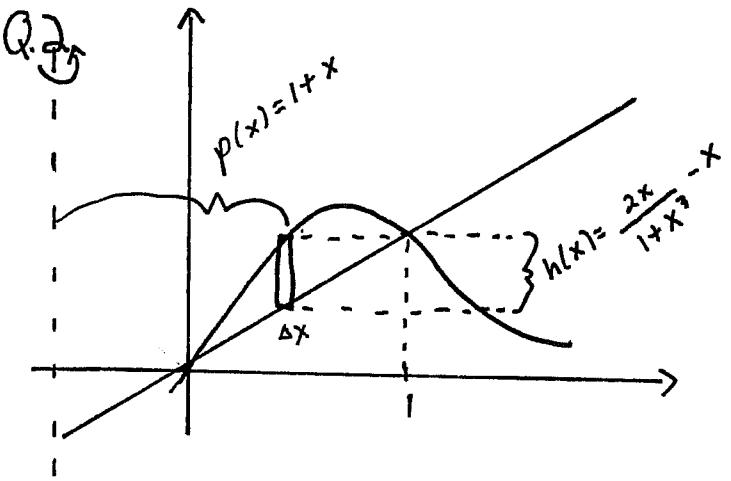


$$\Delta V = \pi\left[(R(y))^2 - (r(y))^2\right]\Delta y$$

$$V = \int_0^1 \pi\left[(1-y^2)^2 - (1-\sqrt[3]{y})^2\right]dy$$

$$= \ldots = \frac{13\pi}{30}$$

Q.2



$$\Delta V = 2\pi\, p(x)\, h(x)\, \Delta x$$

$$V = \int_0^1 2\pi(1+x)\left(\frac{2x}{1+x^3} - x\right)dx$$