

Quiz 5

1 (A) Evaluate $\int \frac{x^3 + x + 1}{\sqrt{x}} dx$

(b). Evaluate $\int (2x + 4x^3 + \tan^2 x + 1) dx$

(c) . A baseball is thrown upward from a height of 160 feet with an initial velocity of 32 feet per second. Use -32 feet per second square for the acceleration due to gravity, neglect air resistance and

(i) Write an equation that gives the height of the ball in terms of time after the projection.

(ii) When will the ball achieve the maximum height.

(iii) What is the maximum height attained by this ball.

$$\int_0^2 (x^2 + 1) dx$$

(d). Use the limit definition to evaluate
You may recall

$$1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$$

$$\text{And } 1^2 + 2^2 + 3^2 + \dots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

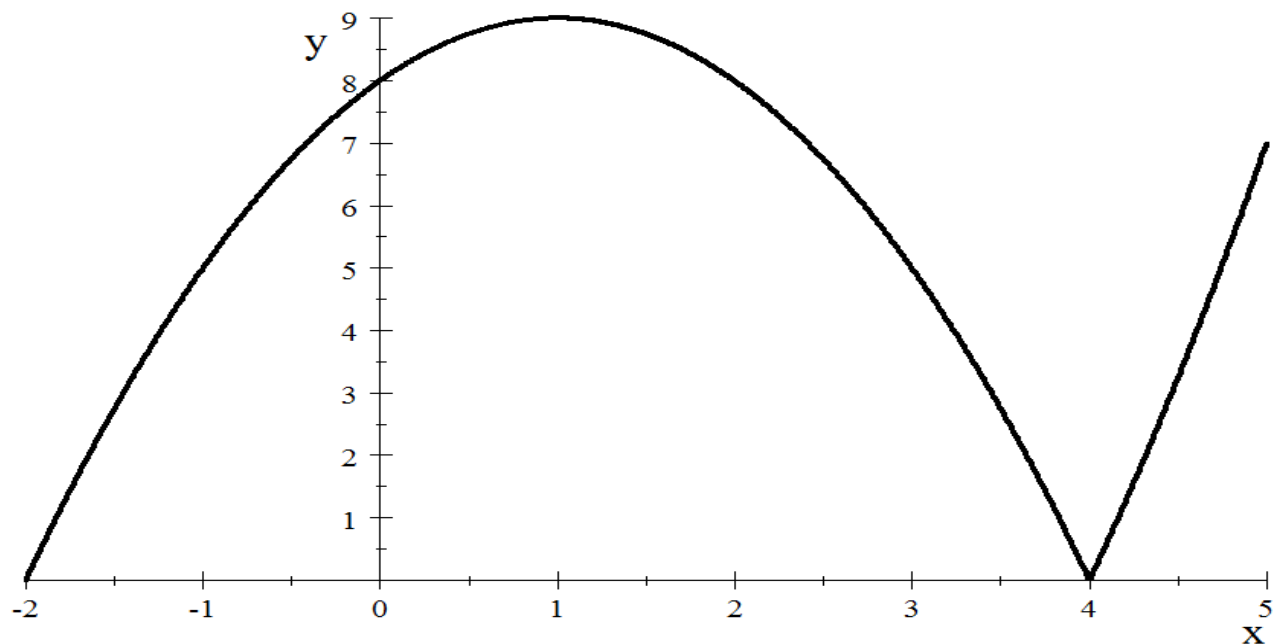
$$\int_0^{\pi} (1 + \sin x) dx$$

2 (a). Evaluate

(b). Find the average value of the function $f(x) = \frac{x^3 + 1}{x^2}$ on the interval $[1, 3]$ and all the values of x in $[1, 3]$ for which the function equals this average value.

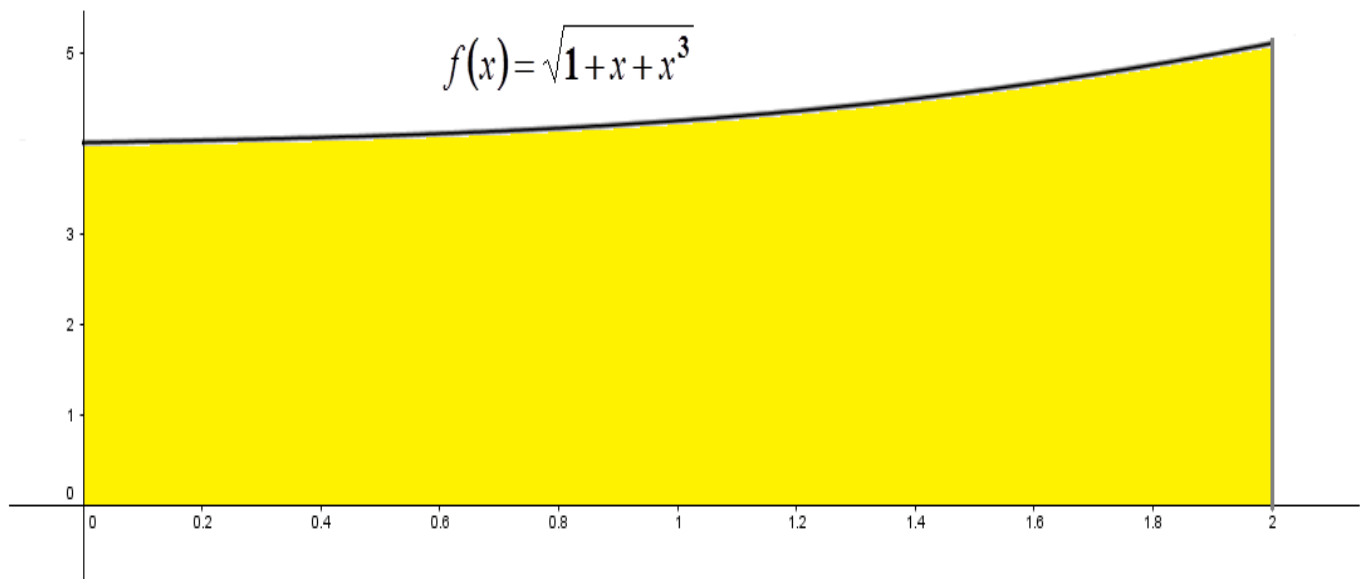
$$\int_{-2}^5 |x^2 - 2x - 8| dx$$

(c). Evaluate



(d) Use 20 subintervals of the interval $[0,2]$ to find the sums of the Left rectangles and the right rectangles to approximate the area

between the graph of $f(x) = \sqrt{1+x+x^3}$ and the x-axis between $0 \leq x \leq 2$. Round the answers to the two digits after the decimal sign.



Use may use Microsoft Excel as shown in the video that I posted or any other method of your choice.

(e) Use Wolfram Alpha or any other program of your choice to find an

approximate value of $\int_0^2 \sqrt{1+x+x^3} dx$ and round the answer to

the two digits after the decimal sign. Find the difference between the

value of $\int_0^2 \sqrt{1+x+x^3} dx$ and the mean of the sum of the areas of

the upper rectangles and the sum of the areas of the lower rectangles that you found in part a.)