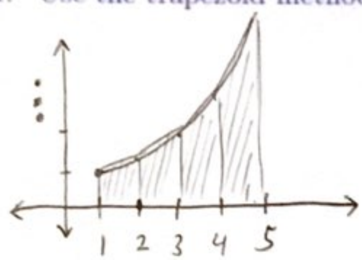
Calculus II. Quiz 4b. Name Key Time

Show all work on this page for full and/or partial credit. Put a box around your final answers in each part.

1. Use the trapezoid method with $n = 4$ trapezoids to approximate the value of $\int_1^5 2^{x^3}\,dx$



$n = 4$

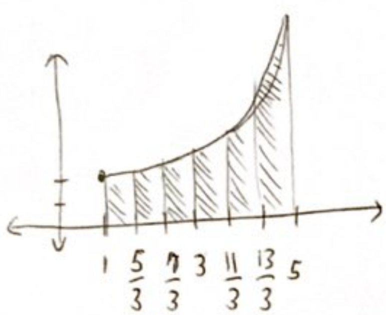
$\Delta x = \frac{5-1}{4} = 1$

$$\int_1^5 2^{x^3}\,dx \cong \frac{1}{2}\left(2^{1^3} + 2\cdot 2^{2^3} + 2\cdot 2^{3^3} + 2\cdot 2^{4^3} + 2^{5^3}\right)$$

$$= \frac{1}{2}\left(2^1 + 2\cdot 2^8 + 2\cdot 2^{27} + 2\cdot 2^{64} + 2^{125}\right)$$

$$= \boxed{2.1267648 \times 10^{37}}$$

2. Use Simpsons method with $n = 6$ to approximate the value of $\int_1^5 2^{x^3}\,dx$



$n=6$

$\Delta x = \frac{5-1}{6} = \frac{2}{3}$

$$\approx \frac{2/3}{3}\left(2^{1^3} + 4\cdot 2^{\left(\frac{5}{3}\right)^3} + 2\cdot 2^{\left(\frac{7}{3}\right)^3} + 4\cdot 2^{3^3} + 2\cdot 2^{\left(\frac{11}{3}\right)^3} + 4\cdot 2^{\left(\frac{13}{3}\right)^3} + 2^{5^3}\right)$$

$$= \boxed{9.4528797 \times 10^{36}}$$