MA 16010 Quiz 9

Simplify your final answer. Show all relevant work for each problem. Little to no work, even with a correct answer, will receive little to no credit.

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1. Use the **left Riemann sum** with 4 rectangles to estimate the signed area under the curve of $y = 2x^2$ on the interval $[0, 8]$.

$y = 2x^2$ $\quad a=0,\ b=8,\ n=4,\ \Delta x = \frac{8-0}{4} = 2$

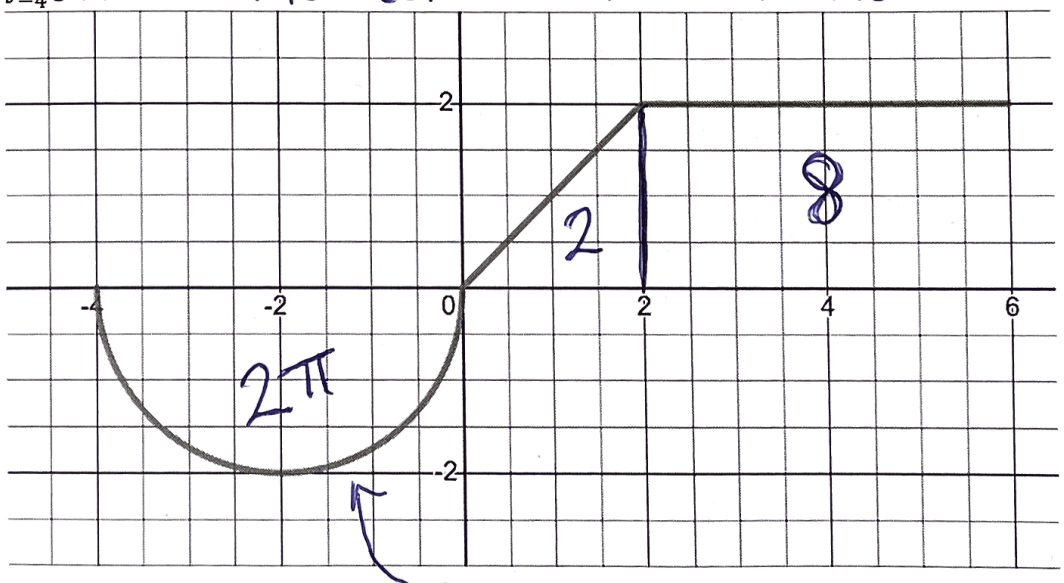
$x_0 = 0,\ x_1 = 2,\ x_2 = 4,\ x_3 = 6,\ x_4 = 8$

$L_4 = 2(2(0)^2 + 2(2)^2 + 2(4)^2 + 2(6)^2)$

$= 2(0 + 8 + 32 + 72)$

$= 224$

2. The graph of $g(x)$ is made up of parts of circles and lines, and is given below. Find $\int_{-4}^{6} g(x)\,dx$. = Area between curve & x-axis on $[-4, 6]$



Below x-axis ⇒ negative area

half circle

$A = \frac{\pi r^2}{2}$

$= \frac{\pi (2)^2}{2}$

$= 2\pi$

$\int_{-4}^{6} g(x)dx = -2\pi + 2 + 8 = \boxed{-2\pi + 10}$