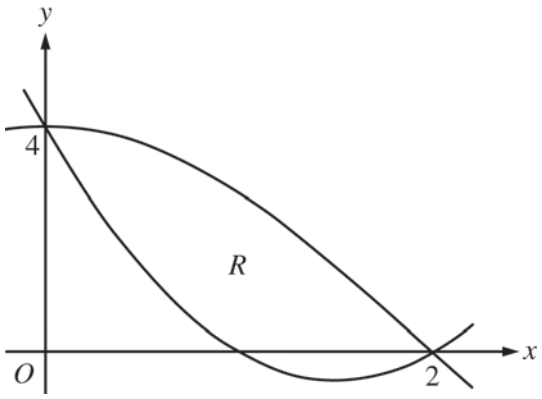


5. Let $f(x) = 2x^2 - 6x + 4$ and $g(x) = 4\cos\left(\frac{1}{4}\pi x\right)$. Let $R$ be the region bounded by the graphs of $f$ and $g$, as shown in the figure above.

   (a) Find the area of $R$.

   (b) Write, but do not evaluate, an integral expression that gives the volume of the solid generated when $R$ is rotated about the horizontal line $y = 4$.

   (c) The region $R$ is the base of a solid. For this solid, each cross section perpendicular to the $x$-axis is a square. Write, but do not evaluate, an integral expression that gives the volume of the solid.

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