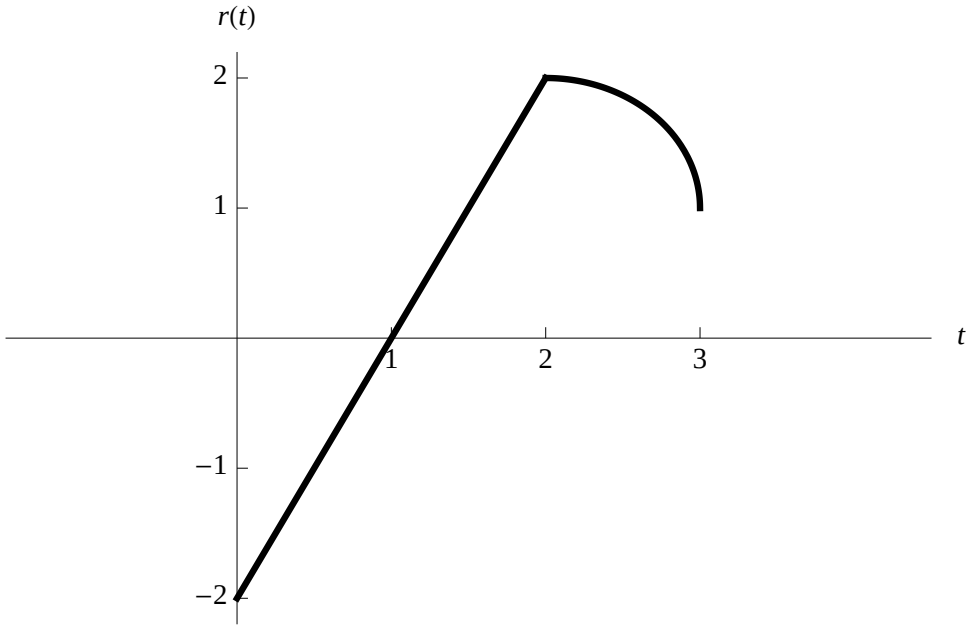
3. [12 points] Shown below is a graph of a function $r(t)$. The graph consists of a straight line between $t = 0$ and $t = 2$ and a quarter circle between $t = 2$ and $t = 3$.



Calculate the following using the graph and the properties of integrals.

a. [4 points] $-3\int_0^3 (2 + r(t))dt$.

b. [4 points] $\int_{1/2}^{3/2} r'(t)dt$.

c. [4 points] The average value of r on the interval $[1, 3]$.