1) Use the graph of $y = f(x)$ to the right and geometry to find the exact value of the expression below.
\[ \int_{1}^{4} f(x) \, dx \]

\[ 1 \cdot 1 + \frac{1}{2} \cdot 1 + 2 \cdot 1 + \frac{1}{2} \cdot 2 \cdot 2 = 5.5 \]

2) Use the graph above to find the approximate area, using a right Riemann sum with 3 rectangles.

\[ 1 \cdot 1 + 1 \cdot 2 + 1 \cdot 3 = 6 \]
3) Find the integral below.

\[ \int 4x^3dx = 4 \int x^3dx = 4 \frac{x^4}{4} + C = x^4 + C \]

4) Find the integral below.

\[ \int x(2x^2 + 3)^5dx = \frac{1}{4} \int u^5 du = \frac{1}{4} \cdot \frac{u^6}{6} + C = \frac{(2x^2 + 3)^6}{24} + C \]

\[ u = 2x^2 + 3 \]
\[ du = 4xdx \]