

evaluate  $\int_2^3 (x^3 + 2x) dx$

$$\begin{aligned}\int_2^3 (x^3 + 2x) dx &= \left[ \frac{x^4}{4} + x^2 \right]_2^3 \\ &= \left[ \frac{3^4}{4} + 3^2 \right] - \left[ \frac{2^4}{4} + 2^2 \right] \\ &= \left[ \frac{81}{4} + 9 \right] - \left[ \frac{16}{4} + 4 \right] \\ &= 20 \frac{1}{4} + 9 - 4 - 4 \\ &= 21 \frac{1}{4}\end{aligned}$$

$$\underline{\int_2^3 (x^3 + 2x) dx = 21 \frac{1}{4}}$$