

- 1) Find the antiderivative: simplify your result, reduce fractions to lowest terms if necessary. No decimals.

$$\int (4x^2 - 3 + 5e^x) dx$$
$$= \frac{4}{3}x^3 - 3x + 5e^x + C$$

- 2) Find the function $f(x)$, if $f''(x) = -9.8$, $f(0) = 3$, $f'(0) = 5$

$$f'(x) = \int (-9.8) dx \quad \text{Note the parentheses!}$$

$$= -9.8x + C$$

$$f'(0) = 5 \implies f'(x) = -9.8x + 5 \quad \text{(The constant term of a polynomial is its value at 0.)}$$

$$f(x) = \int (-9.8x + 5) dx \quad \text{Note the parentheses!}$$

$$= \frac{-9.8x^2}{2} + 5x + C = -4.9x^2 + 5x + C$$

$$f(0) = 3 \implies f(x) = -4.9x^2 + 5x + 3 \quad \text{(The constant term of a polynomial is its value at 0.)}$$
