

Q2ai

$(+C)$ ← don't forget!!

$$\int \frac{2x}{4+3x^2} dx$$

$$u = 4+3x^2$$
$$\frac{du}{dx} = 6x$$

$$dx = \frac{1}{6x} du$$

$$= \frac{1}{3} \int \frac{1}{u} du$$

$$= \frac{1}{3} \ln u = \frac{1}{3} \ln(4+3x^2) + C$$

$$\int_0^4 e^{1/2x} dx$$

$$= 2 \int_0^4 e^u du$$

$$u = \frac{1}{2}x$$

$$\int_0^4 2e^{1/2x} + C \quad \text{so, } \left[2e^{1/2(4)} \right] - \left[2e^{1/2(0)} \right] = 12.78$$