

## Quiz 1

$$\boxed{\#1} \int 4x^6 - 8x^{-4} + \frac{7}{x} dx = \frac{4}{7}x^7 + \frac{8}{3}x^3 + 7\ln|x| + C$$

$$\boxed{\#2} \int 5e^x - \frac{1}{x^2+9} - 2\cos x \, dx$$

$$u = \frac{x}{3}, \quad du = \frac{dx}{3} \Rightarrow$$

$$3du = dx$$

$$\int \frac{1}{x^2+9} = \int \frac{1/9}{(\frac{x}{3})^2 + 1} dx$$

$$\int \frac{1/9 \cdot 3 du}{u^2 + 1} = \frac{1}{3} \arctan u + C = \frac{1}{3} \arctan \frac{x}{3} + C$$

therefore

$$\int 5e^x - \frac{1}{x^2+9} - 2\cos x \, dx =$$

$$5e^x - \frac{1}{3} \arctan \frac{x}{3} - 2\sin x + C$$

$$\boxed{\#3} \int_0^4 6\sqrt{2x+1} \, dx$$

$$u = 2x+1$$

$$du = 2dx$$

$$\frac{1}{2} du = dx$$

$$\int_{u=1}^{u=9} 3\sqrt{u} \, du = 3 \cdot \frac{2}{3} u^{3/2} \Big|_1^9 = 2(9^{3/2} - 1^{3/2}) =$$

$$2(27-1) = 52.$$