

$$\textcircled{12} \int (a^3 + 4 \cdot 3^y) dy = a^3 \int dy + 4 \int 3^y dy = \underline{a^3 y + \frac{4}{\ln 3} \cdot 3^y + c}$$

$$\textcircled{11} \int \left(\frac{4}{1+t^2} - 2at \right) dt = 4 \cdot \int \frac{1}{1+t^2} - 2a \int t dt = \\ = 4 \arctan t - at^2 + c$$

$$\textcircled{8} \int (3x + 4) \cos x dx = 3 \cdot \underbrace{\int x \cos x dx}_A + 4 \underbrace{\int \cos x dx}_B$$

$$A: \int x \cdot \cos x dx \quad \begin{array}{l} u = x; \quad u' = 1 \\ v' = \cos x; \quad v = \sin x \end{array}$$

$$= x \cdot \sin x - \int 1 \cdot \sin x dx = x \cdot \sin x + \cos x + c$$

$$B: \int \cos x dx = + \sin x dx$$



$$\int (3x+4) \cos x dx = 3A + 4B =$$

$$= 3x \sin x + 3 \cos x + 4 \sin x$$

$$= \underline{\sin x \cdot (3x + 4) + 3 \cos x + c}$$