

$$\int a^x dx = \left(\frac{1}{\ln a} \right) a^x + C$$

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

$$5) \int 3^{\sin x} \cdot \cos x dx \quad \begin{array}{l} u = \sin x \\ du = \cos x dx \end{array}$$
$$= \int 3^u du = \frac{1}{\ln 3} \cdot 3^u = \frac{1}{\ln 3} \cdot 3^{\sin x} + C$$

$$6) \int (3-x) \cdot 7^{(3-x)^2} dx \quad \begin{array}{l} u = (3-x)^2 \\ du = -2(3-x) dx \\ -\frac{1}{2} du = (3-x) dx \end{array}$$
$$-\frac{1}{2} \int 7^u du$$
$$= -\frac{1}{2} \left(\frac{1}{\ln 7} \cdot 7^u \right) + C$$
$$= -\frac{1}{2} \left(\frac{1}{\ln 7} \cdot 7^{(3-x)^2} \right) + C$$
$$= \frac{-7^{(3-x)^2}}{2 \ln 7} + C$$