

$$\textcircled{31} \int 9^x \sin(9^x) dx$$

$$u = 9^x$$

$$du = 9^x \cdot \ln 9 dx$$

$$\frac{1}{\ln 9} du = 9^x dx$$

$$\frac{1}{\ln 9} \int \sin u du$$

$$\frac{-1}{\ln 9} \cdot \cos u$$

$$\frac{-1}{\ln 9} \cos 9^x + C$$

~~rs~~
$$\int_0^1 3^{-x} dx = -\frac{3^{-x}}{\ln 3} \Big|_0^1$$

$$= -\frac{1}{\ln 3} (3^{-1} - 3^{-0}) = -\frac{1}{\ln 3} \left(\frac{1}{3} - 1 \right)$$
$$= \frac{2}{3 \ln 3}$$

(30) $\int_{-2}^2 x 10^{x^2} dx$

$u = x^2$

$du = 2x dx$

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

$\frac{1}{2} \int 10^u du$

$\frac{1}{2} \cdot \frac{10^u}{\ln 10} \Big|_{-4}^4 = 0$