

$$70. \int 4^{-x} dx \quad \int -4^u du$$

$$u = -x \\ -du = +dx$$

$$\frac{-4^u}{\ln 4} + C$$

$$71. \int_{-1}^2 2^x dx$$

$$\left. \frac{2^x}{\ln 2} \right]_{-1}^2$$

$$\frac{2^2}{\ln 2} - \frac{2^{-1}}{\ln 2} = \frac{4}{\ln 2} - \frac{1}{2\ln 2}$$

$$\frac{1}{\ln 2} \left(4 - \frac{1}{2} \right)$$

$$\frac{1}{\ln 2} \left(\frac{7}{2} \right)$$

$$\frac{7}{2\ln 2}$$

$$72. \int_{-2}^0 (3^3 - 5^2) dx$$

$$\int_{-2}^0 2 dx = 2x \Big|_{-2}^0$$

$$0 - -4 = \boxed{4}$$

$$73. \int x(5^{-x^2}) dx$$

$$u = -x^2$$

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

$$\int \frac{1}{2} 5^u du$$

$$-\frac{5^u}{2 \ln 5} + C$$

$$\boxed{-\frac{5^{-x^2}}{2 \ln 5} + C}$$

$$74. \int (3-x) 7^{(3-x)^2}$$

$$u = (3-x)^2 = x^2 - 6x + 9$$

$$\frac{du}{2} = \frac{2x-6}{2}$$

$$-\frac{du}{2} = -x+3 = 3-x$$

$$\int 7^u \frac{du}{-2} = \frac{-7^u}{2 \ln 7}$$

$$\boxed{-\frac{7^{(3-x)^2}}{2 \ln 7} + C}$$

$$75. \int \frac{3^{2x}}{1+3^{2x}} dx$$

$$u = 1 + 3^{2x}$$

$$\frac{du}{2 \ln 3} = \frac{3^{2x} \cdot 2 \cdot \ln 3 dx}{2 \ln 3}$$

$$\int \frac{du}{2 \ln 3 u}$$

$$\frac{1}{2 \ln 3} \int \frac{du}{u}$$

$$\boxed{\frac{1}{2 \ln 3} \cdot \ln |1 + 3^{2x}| + c}$$

~~$$\frac{1}{2} \frac{\ln |1 + 3^{2x}|}{\ln 3} + c$$~~

$$76. \int 2^{\sin x} \cos x dx$$

$$u = \sin x$$

$$du = \cos x dx$$

$$\int 2^u du$$

$$\frac{2^u}{\ln 2} + c = \boxed{\frac{2^{\sin x}}{\ln 2} + c}$$

$$80. \quad y = 3^x$$

$$y = 0$$

$$x = 0$$

$$x = 3$$



$$\int_0^3 3^x dx$$

$$\left. \frac{3^x}{\ln 3} \right|_0^3$$

$$\frac{3^3}{\ln 3} - \frac{1}{\ln 3}$$

$$\frac{1}{\ln 3} (27 - 1)$$

$$\frac{26}{\ln 3}$$