

$$(1) 2e^{2x}$$

$$(2) -5e^{-5x}$$

$$(3) -\frac{1}{4}e^{-\frac{x}{4}}$$

$$(4) 2xe^x + x^2e^x - xe^x - e^x = xe^x + x^2e^x - e^x$$

$$(5) 2xe^{x^2}$$

$$(6) (1 + \sqrt{2})x^{\sqrt{2}}$$

$$(7) (1 - e)x^{-e}$$

$$(8) \frac{2}{x} \ln x$$

$$(9) \frac{-\frac{10}{x^2}}{\frac{10}{x}} = -\frac{1}{x}$$

$$(10) \frac{\frac{x}{2}}{2x + 2} = \frac{1}{x + 1}$$

$$(11) \frac{2x}{x^2 + 1}$$

$$(12) \ln x + 1 - 1 = \ln x$$

$$(13) \frac{1}{2} \ln |x| + C$$

$$(14) \frac{1}{3} \ln |3x + 1| + C$$

$$(15) \ln |x^2 + 1| + C$$

$$(16) -\frac{1}{2}e^{-2x} + x + C$$

$$(17) \frac{1}{2}e^x - \frac{1}{2}e^{-x} + C$$