1.   .

$$a^3 \cdot a^4 = \boxed{} \qquad\qquad (a^3)^4 = \boxed{}$$

$$5^{\log_5 32} = \boxed{} \qquad e^{\log x} = \boxed{} \qquad e^{-\log x} = \boxed{}$$

2.   .

(1) $\displaystyle\int x^a \, dx \ (a \neq -1)$ (2) $\displaystyle\int \frac{1}{x} \, dx$ (3) $\displaystyle\int \sin x \, dx$ (4) $\displaystyle\int \cos x \, dx$

(5) $\displaystyle\int \frac{dx}{\cos^2 x}$ (6) $\displaystyle\int e^x \, dx$ (7) $\displaystyle\int \frac{dx}{\sqrt{1-x^2}}$ (8) $\displaystyle\int \frac{dx}{x^2+1}$

(9) $\displaystyle\int \frac{x}{x^2+3} \, dx$

3.   .

(1) $\displaystyle\int \sin 2x \, dx$ (2) $\displaystyle\int \frac{(\sqrt{x}+1)^2}{x} \, dx$ (3) $\displaystyle\int \frac{x}{\sqrt{x+1}+1} \, dx$

(4)* $\displaystyle\int x\sqrt{x^2+1} \, dx$ (5) $\displaystyle\int x \sin x \, dx$ (6) $\displaystyle\int x e^x \, dx$

4.   .

(1) $\displaystyle\int_0^1 \frac{dx}{(x-1)^2}$ (2) $\displaystyle\int_1^2 \frac{1}{\sqrt{x-1}} \, dx$ (3) $\displaystyle\int_5^\infty \frac{1}{x^2} \, dx$

(4) $\displaystyle\int_1^\infty \frac{1}{\sqrt{x}} \, dx$

5.   .

(1) $y' + 2xy = 0$ (2) $y' + 2y = e^x$ (3) $xy' - 2y = x^5 \ \ (x > 0)$

()   .   ()   .   ()   .