A

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1.† (1) $\begin{cases} \pi & (n=m) \\ 0 & (n \neq m) \end{cases}$ (2) 0 (3) $\begin{cases} \pi & (n=m) \\ 0 & (n \neq 0) \end{cases}$

2. (1) $x\operatorname{Arcsin} x + \sqrt{1-x^2}$ (2) $x\log x - x$ (3) $\dfrac{1}{2}(x^2+1)\operatorname{Arctan} x - \dfrac{x}{2}$

3. (1) $\operatorname{Arcsin}\dfrac{x}{a}$ (2) $\operatorname{Arctan}(x-a)$ (3) $\dfrac{1}{2}\left(x\sqrt{a^2-x^2} + a^2\operatorname{Arcsin}\dfrac{x}{a}\right)$

4. (1) $\operatorname{Arctan} x$ (2) $\dfrac{1}{2}\left(\dfrac{x}{x^2+1} + \operatorname{Arctan} x\right)$ (3) $\dfrac{1}{8}\left(\dfrac{x(3x^2+5)}{(x^2+1)^2} + 3\operatorname{Arctan} x\right)$

5.† (1) $\dfrac{1}{2}\left(\dfrac{1}{x-1} - \dfrac{1}{x+1}\right)$ (2) $\dfrac{1}{3}\left(\dfrac{x+2}{x^2+x+1} - \dfrac{1}{x-1}\right)$ (3) $\dfrac{1}{x} - \dfrac{x-1}{x^2+1}$

(4) $\dfrac{1}{3}\left(\dfrac{1}{x-1} - \dfrac{x-1}{x^2+x+1}\right)$ (5) $x + \dfrac{1}{2}\left(\dfrac{3}{x-1} - \dfrac{1}{x+1}\right)$

6.† (1) $\dfrac{1}{2}\log\left|\dfrac{x-1}{x+1}\right|$ (2) $\dfrac{1}{6}\log(x^2+x+1) - \dfrac{1}{3}\log|x-1| + \dfrac{1}{\sqrt{3}}\operatorname{Arctan}\dfrac{2x+1}{\sqrt{3}}$

(3) $\operatorname{Arctan} x + \log|x| - \dfrac{1}{2}\log(x^2+1)$

(4) $\dfrac{1}{6}\log(x^2-x+1) - \dfrac{1}{3}\log|x+1| + \dfrac{1}{\sqrt{3}}\operatorname{Arctan}\dfrac{2x-1}{\sqrt{3}}$

(5) $\dfrac{x^2}{2} + \dfrac{3}{2}\log|x-1| - \dfrac{1}{2}\log|x+1|$

7. (1) $\dfrac{1}{2\sqrt{2}}\left(\dfrac{x+\sqrt{2}}{x^2+\sqrt{2}x+1} - \dfrac{x-\sqrt{2}}{x^2-x+1}\right)$ (2) $\dfrac{1}{2\sqrt{2}}\left(\dfrac{x}{x^2-\sqrt{2}x+1} - \dfrac{x}{x^2+\sqrt{2}x+1}\right)$

(3) $\dfrac{1}{2}\left(\dfrac{x}{x^2+\sqrt{2}x+1} + \dfrac{x}{x^2-\sqrt{2}x+1}\right)$

8.† (1) $\dfrac{e^{ax}}{a}\left(x^3 - \dfrac{3}{a}x^2 + \dfrac{6}{a^2}x - \dfrac{6}{a^3}\right)$ (2) $\dfrac{1}{2}(x^2+1)e^{-x^2}$ (3) $\dfrac{1}{3}\log\dfrac{e^x+1}{e^x+4}$

(4) $\dfrac{1}{2}\operatorname{Arctan}\dfrac{x^2\sqrt{a^4-x^4}}{x^4-a^4}$ (5) $\log(\sqrt{x^2-a^2}+x)$ (6) $\dfrac{1}{4}\left(\log\left|\dfrac{x+1}{x-1}\right| - \dfrac{2x}{x^2-1}\right)$

(7) $\dfrac{x^2}{2}\log|x| - \dfrac{x^2}{4}$ (8) $(\operatorname{Arcsin} x)^2$

$x(\operatorname{Arcsin} x)^2 + 2\sqrt{1-x^2}\operatorname{Arcsin} x - 2x$

(　　　) (1), (2)　　　　　　　　　　(3) $t=e^x$ (4) $t=x^2$ (5) $s=\sqrt{x^2-a^2}+x$

(6)　　　　　　(7)

6　27　(　　　　　　　　　†　　　　　　　　*　　　　)
HP: http://www2.math.kyushu-u.ac.jp/~h-nakashima/lecture/2017C.html