8　おまけ

$\theta_{n,\,k}=\dfrac{2k-1}{2n}\pi$ とする。

$$\int\frac{dx}{1+x^n}=\frac{2}{n}\sum_{k=1}^{n}\left[-\frac{1}{2}\cos 2\theta_{n,\,k}\log\left(x-2\sqrt{x}\cos\theta_{n,\,k}+1\right)+\sin 2\theta_{n,\,k}\arctan\left(\frac{\sqrt{x}-\cos\theta_{n,\,k}}{\sin\theta_{n,\,k}}\right)\right]+C$$

$$\int\sqrt{\tan\theta}\,d\theta=-\frac{\sqrt{2}}{4}\log\left(\frac{\tan\theta+\sqrt{2\tan\theta}+1}{\tan\theta-\sqrt{2\tan\theta}+1}\right)+\frac{\sqrt{2}}{2}\left(\arctan\left(\sqrt{2\tan\theta}+1\right)+\arctan\left(\sqrt{2\tan\theta}-1\right)\right)+C$$

$$\int\frac{1}{\sqrt{\tan\theta}}\,d\theta=\frac{\sqrt{2}}{4}\log\left(\frac{\tan\theta+\sqrt{2\tan\theta}+1}{\tan\theta-\sqrt{2\tan\theta}+1}\right)+\frac{\sqrt{2}}{2}\left(\arctan\left(\sqrt{2\tan\theta}+1\right)+\arctan\left(\sqrt{2\tan\theta}-1\right)\right)+C$$

$$\frac{1}{z^n+1}=-\frac{1}{n}\sum_{k=1}^{n}\frac{e\left(\dfrac{2k-1}{n}\pi\right)}{z-e\left(\dfrac{2k-1}{n}\pi\right)}$$

$$\frac{1}{z^n-1}=\frac{1}{n}\sum_{k=1}^{n}\frac{e\left(\dfrac{2k\pi}{n}\right)}{z-e\left(\dfrac{2k\pi}{n}\right)}=\frac{1}{n}\sum_{k=1}^{n}\frac{\exp\left(i\dfrac{2k\pi}{n}\right)}{z-\exp\left(i\dfrac{2k\pi}{n}\right)}$$

9　参考文献

YouTube ヨビノリたくみさんのチャンネル 予備校のノリで学ぶ「大学の数学・物理」

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=video&cd=&cad=rja&uact=8&ved=2ahUKEwiar7fIzpb6AhUDw4sBHU28DxMQFnoECAkQAg&url=https://www.youtube.com/channel/UCqmWJJolqAgjIdLqK3zD1QQ&usg=AOvVaw3clbmmW3q8O9-Fgp4nIJlw