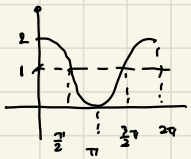
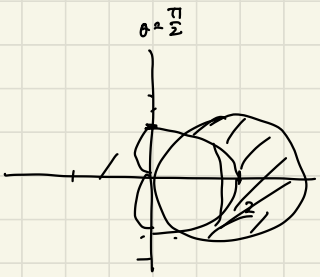
2018 113337 통계학과 조성준

퀴즈 1

1.





$$2\times\frac{1}{2}\int_0^{\pi}(3\cos\theta)^2-(1+\cos\theta)^2\,d\theta$$

(a) $$2\times\frac{1}{2}\int_0^{\pi}(8\cos^2\theta-2\cos\theta-1)\,d\theta$$

$$=\int_0^{\pi}\left(8\times\frac{1+\cos 2\theta}{2}-2\cos\theta-1\right)d\theta$$

$$=\int_0^{\pi}\left(4(1+\cos 2\theta)-2\cos\theta-1\right)d\theta$$

$$=[4\theta]_0^{\pi}+2[\sin 2\theta]_0^{\pi}-2[\sin\theta]_0^{\pi}-[\theta]_0^{\pi}$$

$$=4\pi-\pi=3\pi$$

$\therefore 3\pi$

2.

$$\lim_{n\to\infty}\left|\frac{\frac{(-1)^{n+1}}{3^{n+1}}(x-2)^{n+1}}{\frac{(-1)^n}{3^n}(x-2)^n}\right|$$

$$=\lim_{n\to\infty}\left|\frac{1}{3}(x-2)\right|$$

$$=\lim_{n\to\infty}\frac{1}{3}|x-2|$$

$|x-2|<1$ 수렴반경

$(1,3)$

$x=1$

$$\sum_{n=1}^{\infty}\frac{(-1)^n}{3^n}(-1)^n=\sum_{n=1}^{\infty}\frac{1}{3^n}\quad\therefore\text{수렴}$$

$x=3$

$$\sum_{n=1}^{\infty}\frac{(-1)^n}{3^n}=\sum_{n=1}^{\infty}\left(-\frac{1}{3}\right)^n\quad\therefore\text{수렴}$$

수렴 정확은 $[1,3]$ 반경