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이항정리

$$(a+b)^n = a^n + na^{n-1} \cdot b + \frac{n(n-1)a^{n-2} \cdot b^2}{2!} + \dots$$

이항

$$\begin{aligned}\sqrt{4R^2 - f^2} &= (4R^2 - f^2)^{\frac{1}{2}} \\ &\doteq (4R^2)^{\frac{1}{2}} - \frac{1}{2}(4R^2)^{-\frac{1}{2}} \cdot f^2 \\ &= 2R - \frac{1}{2} \cdot \frac{1}{2R} \cdot f^2 \\ &= 2R - \frac{f^2}{4R}\end{aligned}$$

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2차 9.16 이항

$$\sin \frac{1}{2} \theta' = \frac{x/2}{R} = \frac{x}{2R}$$

$$\therefore \theta' = 2 \cdot \sin^{-1} \frac{x}{2R}$$

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$$\sin^{-1} x = x + \frac{1}{3 \cdot 2} x^3 + \dots$$

이항

$$\sin^{-1} \frac{x}{2R} \doteq \frac{x}{2R} + \frac{1}{6} \left( \frac{x}{2R} \right)^3$$