D. 다음 등식을 증명하거나, 도함수를 구하여라.

[1]. $e^{ix} = \cos x + i\sin x, \quad (i = \sqrt{-1}\,)$

[2]. $f'\left(f^{-1}(x)\right) \neq 0 \Rightarrow \left(f^{-1}\right)''(x) = \dfrac{-f''\left(f^{-1}(x)\right)}{\left[f'\left(f^{-1}(x)\right)\right]^3}$

[3]. $\tan^{-1}\dfrac{x}{\sqrt{1-x^2}} = \sin^{-1}x\,,\ (-1 < x < 1)$

[4]. $\displaystyle\int_0^x \int_0^x F(x)\,dx^2 = \int_0^x (x-u)F(u)\,du$

[5]. $1 + 2^3 + 3^3 + \bullet\ \bullet\ \bullet + n^3 = \left[\dfrac{n(n+1)}{2}\right]^2$, (귀납법 불사용)

[6]. $\dfrac{d}{dx}\displaystyle\int_x^{x^2} \frac{\sin x\theta}{\theta}\,d\theta = \,?$

[7]. $\dfrac{d}{dx}\displaystyle\int_0^{x^2} \tan^{-1}\left(\frac{\theta}{x}\right)d\theta = \,?$

[8]. $\cosh x + \sinh x = e^x$

[9]. $\cosh x - \sinh x = e^{-x}$

[10]. $\tanh(x \pm y) = \dfrac{\tanh x \pm \tanh y}{1 \pm \tanh x \tanh y}$

[11]. $\operatorname{sech}^{-1}x = \ln\left(\dfrac{1+\sqrt{1-x^2}}{x}\right), \ (0 < x \leq 1)$

[12]. $\lim_{x\to 2}(2x+1)=5$ 임을 증명.

[13]. $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x=e$ 임을 증명.

[14]. $\frac{d^n}{dx^n}\sin x=?$

[15]. $\frac{d^n}{dx^n}\left(\frac{1}{a^2-x^2}\right)=?\,,(a\neq 0)$

[16]. $\frac{d^n}{dx^n}x^2e^{kx}=?$

[17]. $\frac{d^n}{dx^n}\cos ax=?$

[18]. $\frac{d}{dx}\left(\cos x^{\cos x}\right)=?$

[19]. $\frac{d}{dx}(\sin x)^x=?$

[20]. $\frac{d^n}{dx^n}\left(e^x\sin x\right)=?$

[21]. $\tan^{-1}\left(\frac{1}{2}\right)+\tan^{-1}\left(-\frac{1}{3}\right)=?$

[22]. $2 \bullet \tan^{-1}\left(\frac{1}{3}\right)+\tan^{-1}\left(\frac{1}{7}\right)=?$

[23]. $\frac{d^n}{dx^n}\left(x^2 \sin x\right)=?$

[24]. $\tan^{-1}(a)-\tan^{-1}(b)=\cot^{-1}(b)-\cot^{-1}(a)$임을 증명.

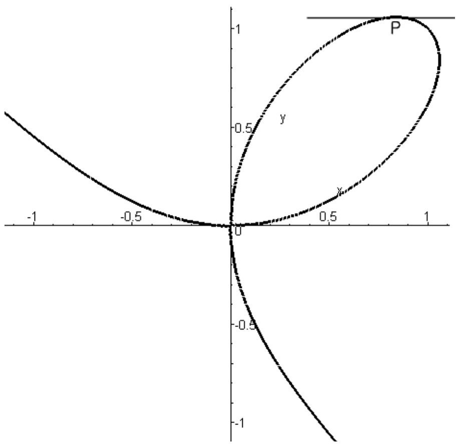
[25]. $\sin^{-1}\left(\sqrt{\frac{x}{6}}\right)+\sin^{-1}\left(\sqrt{1-\frac{x}{6}}\right)=\frac{\pi}{2}$임을 증명.

[26]. $\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right)=\frac{f'(x)}{g'(x)} \Rightarrow f(x)=?,\ g(x)=?$

[27]. $(\cosh x+\sinh x)^n=\cosh(nx)+\sinh(nx)$임을 증명.

[28]. $f(f(x))=x^4-4x^3+8x+2 \Rightarrow f(x)=?$

[29]. 데카르트 엽선의 점 P의 좌표를 구하여라.



[30]. $f(x)=\int_0^x \sqrt{1+t^4}\,dt,\ c=f(1) \Rightarrow \left(f^{-1}\right)'(c)=?$

[31]. $4\tan^{-1}\left(\dfrac{1}{5}\right)-\tan^{-1}\left(\dfrac{1}{239}\right)=\ ?$

[32]. $f(x)=x^7+8x^3+4x-2, \Rightarrow \left(f^{-1}\right)'(11)=?$

[33]. $\sinh^{-1}\sqrt{x^2-1} = \cosh^{-1}x,\ (x\geq 1)$

[34]. $\cosh^{-1}\sqrt{x^2+1} = \sinh^{-1}x,\ (x\geq 0)$

[35]. $(\cosh x-\sinh x)^n = \cosh(nx)-\sinh(nx)$임을 증명.

[36]. $\dfrac{1}{x}\cdot f(-x)+f\left(\dfrac{1}{x}\right)=x,\ (x\neq 0)\Rightarrow f(x)=\ ?$

[37]. $f(x)=\tan^{-1}(2x) \Rightarrow f^{(99)}(0)=\ ?$

[38]. $\left(x_1+x_2+\cdot\cdot+x_k\right)^{nk}\Rightarrow x_1^n x_2^n\ \cdot\cdot\ x_k^n$의 계수 : k배

[39]. $\displaystyle\sum_{n=0}^{\infty}2^{-n} = \sum_{n=0}^{\infty}n\cdot 2^{-n}$

[40]. $ax^2+2hxy+by^2+2gx+2fy+c=0$ (두 축의 각 : 60 °)
$a'X^2+2h'XY+b'Y^2+2g'X+2f'Y+c'=0$ (두 축의 각 : 90 °)
$$\Rightarrow\begin{vmatrix} a' & h' & g' \\ h' & b' & f' \\ g' & f' & c' \end{vmatrix} = \frac{4}{3}\begin{vmatrix} a & h & g \\ h & b & f \\ g & f & c \end{vmatrix}$$

[41]. $l: ax+by+c=0,\ l': a'x+b'y+c'=0$ (두 축의 각 : ω)
$\Rightarrow l\perp l'$ 일 조건은?

[42]. 두 직선의 방향여현 $(l_1, m_1, n_1); (l_2, m_2, n_2)$, 두 직선 사이 각: θ

$\Rightarrow \sin\theta = ?$

[43]. 세 직선의 방향여현 $(l, m, n); (l', m', n'); (l-l', m-m', n-n')$

$\Rightarrow$ 각각 직선들의 사이 각은?

[44]. $P(r_1, \theta_1, \phi_1)$, $Q(r_2, \theta_2, \phi_2)$, O, $\angle POQ = \psi \Rightarrow \cos\psi = ?$

[45]. 방정식 $2x^2 + \lambda y^2 + 2z^2 - yz + 5zx + xy = 0$이 두 평면을 만들 때 두 평면의 사이 각 과 λ을 구하여라.

[46]. $(1+x)(1+x^2)(1+x^4) \cdot\cdot (1+x^{2^{n-1}}) = 1 + x + x^2 + \cdot\cdot\cdot + x^{2^n - 1}$증명

[47]. $\cos^4 k + \cos^4 2k + \cdot\cdot\cdot + \cos^4 nk = \dfrac{3n}{8} - \dfrac{5}{16}, \left(k = \dfrac{\pi}{2n+1}\right)$

[48]. $S_n = 1 + \dfrac{1}{2} + \cdot\cdot\cdot + \dfrac{1}{n} \Rightarrow S_1 + S_2 + \cdot\cdot\cdot + S_{n-1} = nS_n - n$ 증명

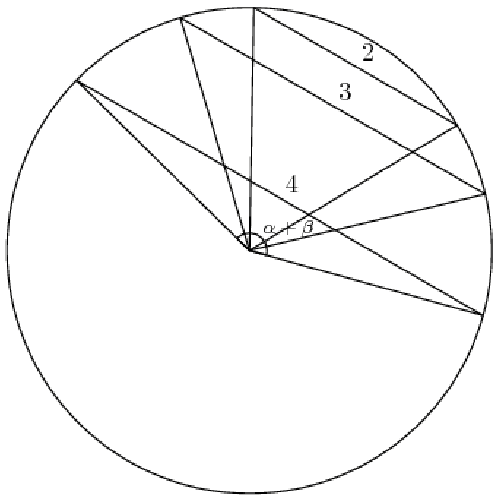
[49]. $x = \left(1 + \dfrac{1}{n}\right)^n, y = \left(1 + \dfrac{1}{n}\right)^{n+1} \Rightarrow x^y = y^x$ 증명

[50]. $f(x) = \dfrac{1}{x^k - 1}, p(x) = (x^k - 1)^{n+1} f^{(n)}(x) \Rightarrow p(1) = ?, (k, n \in Z^+)$

[51]. $f\left(\dfrac{1}{n}\right) = \dfrac{n^2}{n^2 + 1} \Rightarrow f^{(k)}(0) = ?, (k, n \in N)$

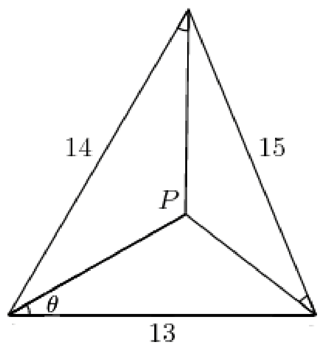
[52]. $f(\alpha)^2 = 2008 + \displaystyle\int_0^\alpha f(x)^2 + f'(x)^2 \, dx \Rightarrow f(x) = ?$

[53]. **현의 길이 2, 3, 4에 대응되는 중심각** $\alpha, \beta, \alpha+\beta$**일 때** $\cos\alpha = ?$

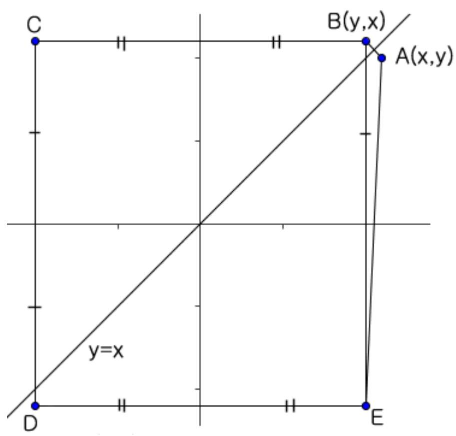


[54]. $(n+10) \mid (n^3+100)\,,\, n \in N \Rightarrow \max\{n\} = \,?$

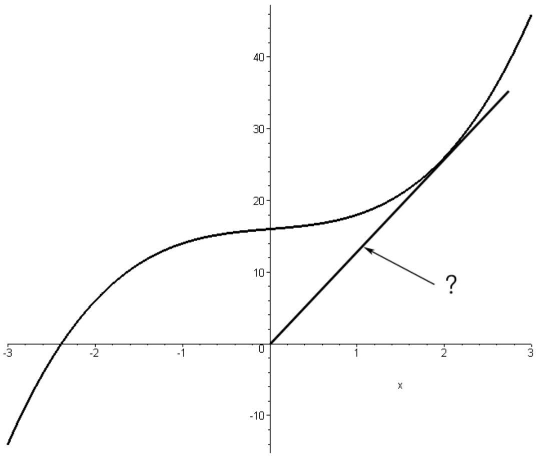
[55]. $\tan\theta = \,?$



[56]. $\frown ABCDE = 451 \Rightarrow A = \,?\,,\,(y < x \in N)$



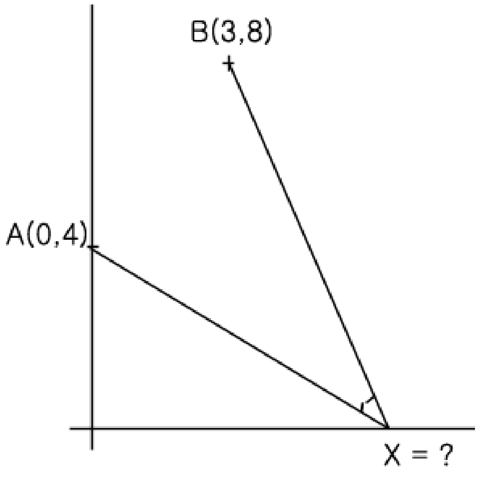
[57]. $y=x^3+x+16$에서 물음표의 직선 식은?



[58]. $\int_1^y x\ln x\,dx = \frac{1}{4} \Rightarrow y = ?,\ (y>1)$

[59]. $f(x)=\sin^6\left(\frac{x}{4}\right)+\cos^6\left(\frac{x}{4}\right) \Rightarrow f^{(2008)}(0) = ?$

[60]. $\angle AXB$ 가 최대가 되는 X의 좌표는?



[61]. $\frac{1}{{}_nC_0}+\frac{1}{{}_nC_1}+\cdots+\frac{1}{{}_nC_n}=\left(\frac{n+1}{2^{n+1}}\right)\left(\frac{2}{1}+\frac{2^2}{2}+\cdots+\frac{2^{n+1}}{n+1}\right)$증명.

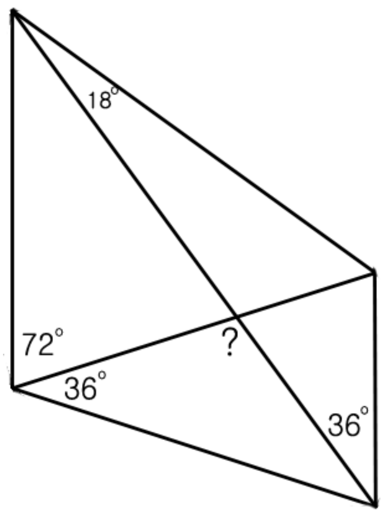
[62]. $\dfrac{\displaystyle\sum_{n=1}^{90}(2n)\sin(2n^{\circ})}{90} = \cot(1^{\circ})$임을 증명.

[63]. $z=\cos\dfrac{2\pi}{n}+i\sin\dfrac{2\pi}{n} \Rightarrow \dfrac{1}{1+z}+\dfrac{1}{1+z^2}+\cdots+\dfrac{1}{1+z^n}=\dfrac{n}{2}$ 증명.

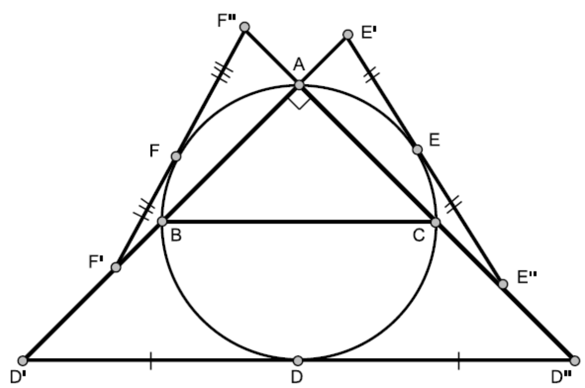
[64]. $f_0(x)=1,\ f_n(0)=0,\ \dfrac{d}{dx}f_{n+1}(x)=(n+1)f_n(x+1)$

$\Rightarrow f_n(x)=\ ?,\ (\ n\geq 1)$

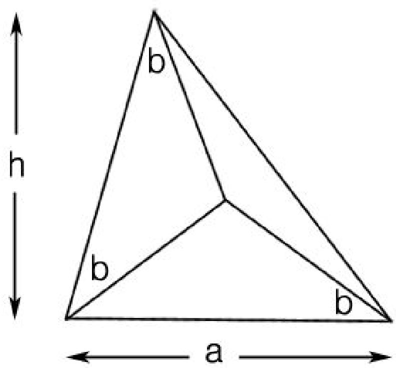
[65]. 물음표는 몇 도가 되는가?



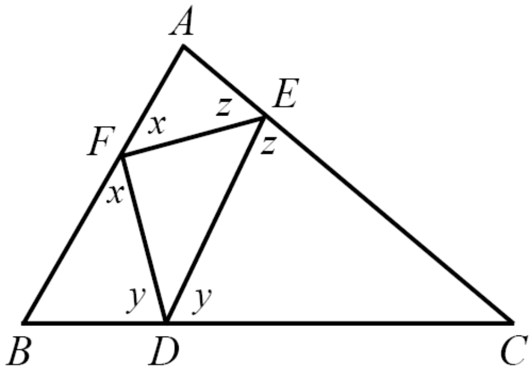
[66]. $\triangle DEF$가 정삼각형임을 증명.



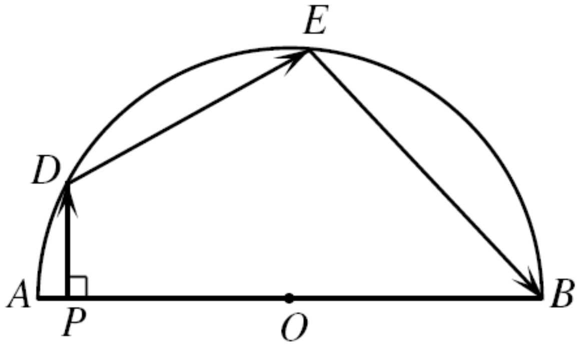
[67]. $h < \dfrac{\sqrt{3}}{2}a \Rightarrow b$각의 범위는?



[68]. $\angle BDF = \angle BAC$ 임을 증명.

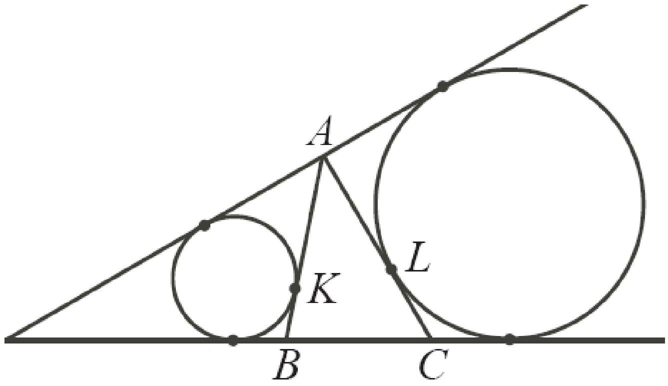


[69]. $\angle PDO = \angle EDO \Rightarrow \angle DOP = ?$

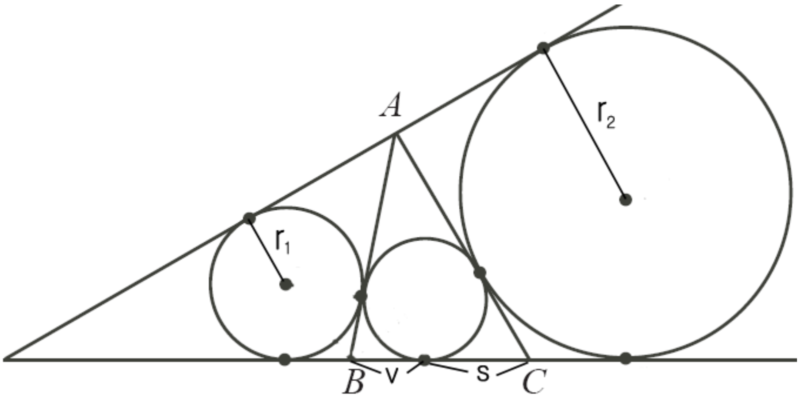


[70]. ${}_{3n}C_n = \sum_{k=0}^{n} {}_{2n}C_k \cdot {}_{n}C_k$ 임을 증명.

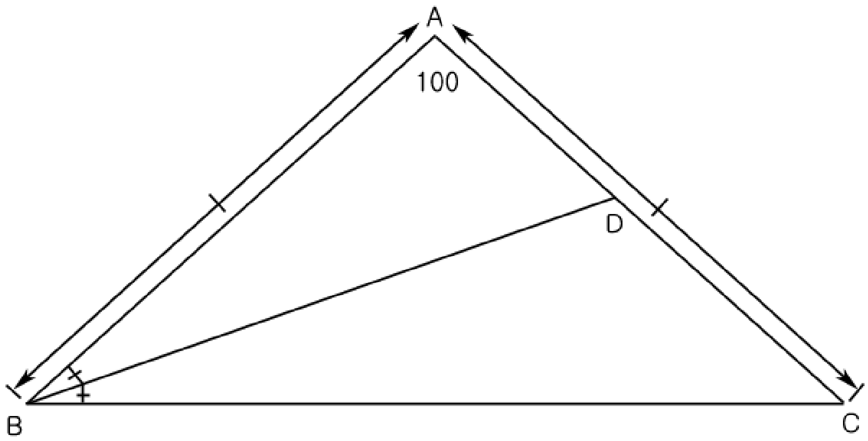
[71]. $\triangle ABC$ 둘레의 2등분하는 점 K, L 임을 증명.



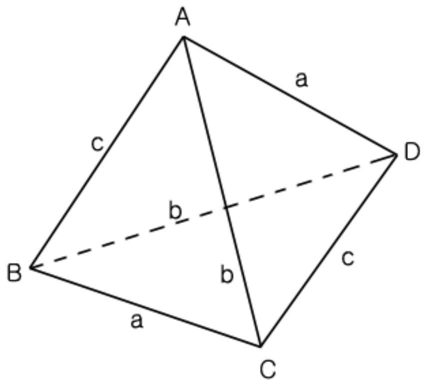
[72]. $\triangle ABC = sr_1 + vr_2$ 임을 증명.



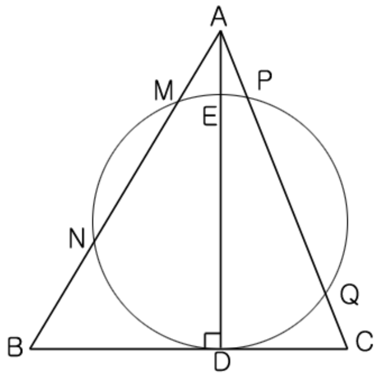
[73]. $BD + AD = BC$ 임을 증명.



[74]. **선분** BC, AD**의 사이각 :** $\alpha \Rightarrow \cos\alpha = \dfrac{\sin(B-C)}{\sin(B+C)}$ **임을 증명.**



[75]. $(AM+AN) : AC = (AP+AQ) : AB$ **임을 증명.**



[76]. $(3-2\sqrt{2})(17+12\sqrt{2})^n + (3+2\sqrt{2})(17-12\sqrt{2})^n - 2$**는 자연수의 제곱임을 증명.**

[77]. $a, b, c : \triangle ABC$ 세변의 길이, a^2, b^2, c^2: 등차수열

$\Rightarrow \cot A, \cot B, \cot C$: 등차수열임을 증명.

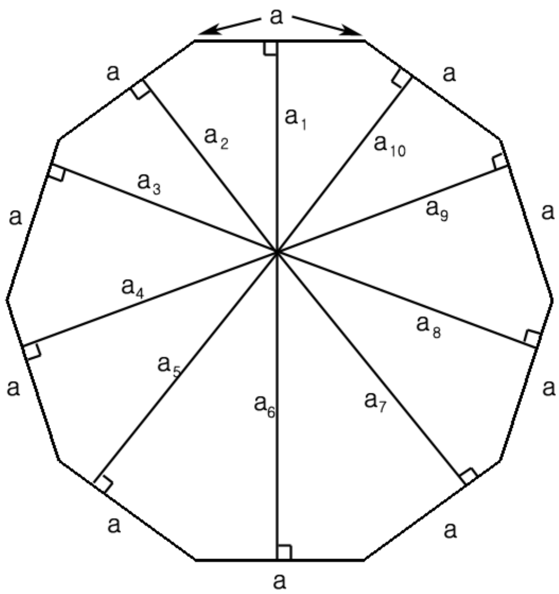
[78]. $a_k = 1 + \dfrac{1}{2} + \cdot\cdot\cdot + \dfrac{1}{k}$, $k \in N$

$\Rightarrow 3a_1 + 5a_2 + \cdot\cdot + (2n+1)a_n = (n+1)^2 a_n - \dfrac{n(n+1)}{2}$

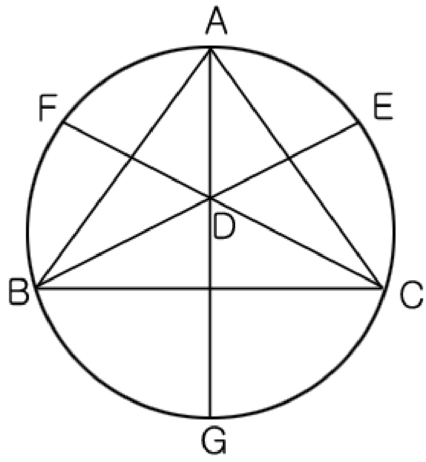
[79]. $\theta = \dfrac{\pi}{2n+1}$, ${}_{2n+1}C_1 x^n - {}_{2n+1}C_2 x^{n-1} + {}_{2n+1}C_3 x^{n-2} - \bullet\ \bullet = 0$

$\Rightarrow \cot^2\theta,\ \cot^2 2\theta, ..., \cot^2 n\theta$: 방정식의 근임을 증명.

[80]. $\displaystyle\sum_{k=1}^{n} \frac{1}{a_k} > \frac{2\pi}{a}$ **임을 증명.**

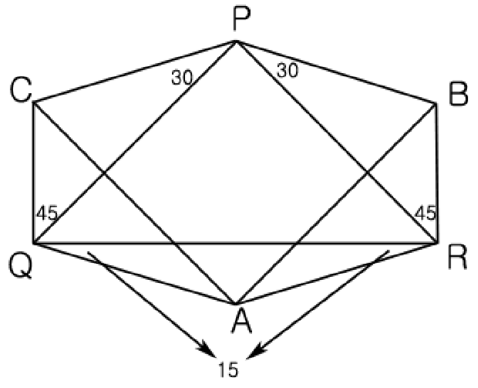


[81]. **삼각형의 내심:** $D \Rightarrow \overline{AG}\ \perp \overline{EF}$ **임을 증명.**

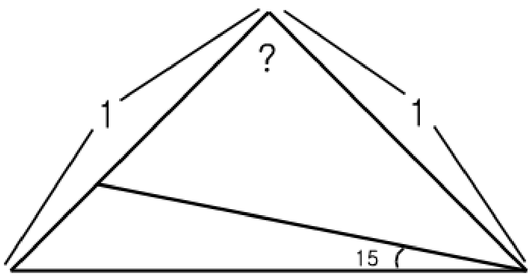


[82]. $\dfrac{\cos\alpha}{\cos\beta} + \dfrac{\sin\alpha}{\sin\beta} = -1 \Rightarrow \dfrac{\cos^3\beta}{\cos\alpha} + \dfrac{\sin^3\beta}{\sin\alpha} = 1$**임을 증명.**

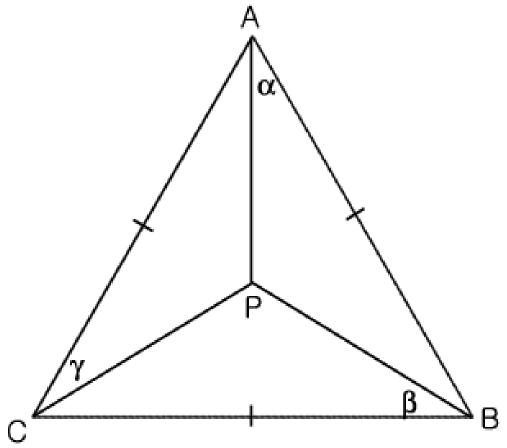
[83]. $\triangle ABC$ 는 직각 이등변 삼각형임을 증명.



[84]. 물음표는 몇 도가 되는가?



[85]. $\alpha+\beta+\gamma=90^\circ \Rightarrow P$점의 자취는?



[86]. $xf(x)-\int_0^x f(t)dt=x+\ln\left(\sqrt{x^2+1}-x\right), f(0)=\ln 2 \Rightarrow f(x)=?$

[87]. $\triangle ABC \Rightarrow \tan A+\tan B+\tan C=\tan A\tan B\tan C$ 임을 증명.

[88]. $f(x)=\sin\left(x^3\right) \Rightarrow \dfrac{d^{15}f(0)}{dx^{15}}=?$

[89]. $f(1)=\dfrac{1}{2}, f(x)>0, \displaystyle\int_0^x f(t)dt = x\sqrt{f(x)} \Rightarrow f(x)=?$

[90]. $f(x)\in R, f(x)=x^2-x\left(2\displaystyle\int_0^1 |f(t)|dt\right)^{1/2} \Rightarrow f(x)=?$

[91]. $\displaystyle\int_0^\infty \ln\left(x+\frac{1}{x}\right)\frac{dx}{\left(1+x^2\right)}=\int_0^{\frac{\pi}{2}}\left(\frac{x}{\sin x}\right)^2 dx$ **임을 증명.**

[92]. $\begin{cases} x(t)=1+\displaystyle\int_0^t e^{-2(t-s)}x(s)\,ds \\ y(t)=\displaystyle\int_0^t e^{-2(t-s)}\{2x(s)+3y(s)\}\,ds \end{cases} \Rightarrow x(t), y(t)=?$

[93]. $\{f(x)\}^{2006}=\displaystyle\int_0^x f(t)dt+1 \Rightarrow \{f(2006)\}^{2005}=?$

[94]. $\displaystyle\int_0^a \frac{dx}{e^x+4e^{-x}+5}=\ln\sqrt[3]{2} \Rightarrow a=?$

[95]. $\displaystyle\int_0^x f(t)dt=e^x-ae^{2x}\int_0^1 f(t)e^{-t}dt \Rightarrow a=?$

[96]. $0<x<1,\ f(x)=\displaystyle\int_0^x \frac{dt}{\sqrt{1-t^2}}$

$\Rightarrow \dfrac{d}{dx}f\left(\sqrt{1-x^2}\right)=?,\ f\left(\dfrac{1}{\sqrt{2}}\right)=?, f(x)+f\left(\sqrt{1-x^2}\right)=?$

[97]. $0 < x < \dfrac{\pi}{2}, f(x) = \displaystyle\int_0^x \frac{d\theta}{\cos\theta} + \int_x^{\frac{\pi}{2}} \frac{d\theta}{\sin\theta} \Rightarrow \min\{f(x)\} = ?$

[98]. $\displaystyle\lim_{x\to 0} \frac{\sin nx}{mx} = \frac{n}{m}$임을 증명.

[99]. $y(x) + \displaystyle\int_1^x y(t)dt = x^2 \Rightarrow y(x) = ?$

[100]. $\dfrac{2}{\pi} = \sqrt{\dfrac{1}{2}}\sqrt{\dfrac{1}{2}+\dfrac{1}{2}\sqrt{\dfrac{1}{2}}}\sqrt{\dfrac{1}{2}+\dfrac{1}{2}\sqrt{\dfrac{1}{2}+\dfrac{1}{2}\sqrt{\dfrac{1}{2}}}}\ \cdot\cdot$ 증명.

[101]. $\pi = \sqrt{12}\left(1 - \dfrac{1}{3\cdot 3} + \dfrac{1}{5\cdot 3^2} - \dfrac{1}{7\cdot 3^3} + \cdot\cdot\right)$ 임을 증명.

[102]. $\displaystyle\sum_{k=0}^{\infty} \frac{2}{2k+1}\left(\frac{a}{2b+a}\right)^{2k+1} = \ln\left(1+\frac{a}{b}\right)$임을 증명.

[103]. $\displaystyle\int_1^{xy} f(t)dt = y\int_1^x f(t)dt + x\int_1^y f(t)dt, f(1) = 3$

$\Rightarrow f(x) = ?, (x, y > 0)$

[104]. $f(x) = \tan^{-1}(e^x) - \dfrac{\pi}{4} \Rightarrow f(x):$ 기함수임을 증명.

[105]. $\displaystyle\int_0^{\infty} \frac{dx}{a^2e^x + b^2e^{-x}} = \frac{1}{ab}\tan^{-1}\left(\frac{b}{a}\right)$ 임을 증명.

[106]. $\dfrac{d^n}{dx^n}\left(\dfrac{x^n}{1-x}\right) = ?$

[107]. (1). $\dfrac{d}{dx}\displaystyle\int_{x}^{x^2} t \bullet f(t)\,dt = ?$

(2). $\dfrac{d}{dx}\displaystyle\int_{x}^{x^2} x \bullet f(t)\,dt = ?$

(3). $\dfrac{d}{dx}\displaystyle\int_{x}^{x^2} x \bullet f(x)\,dt = ?$

[108]. $\dfrac{d^2}{dx^2}\displaystyle\int_{0}^{x}\int_{1}^{\sin t}\sqrt{1+u^4}\,du\,dt = ?$

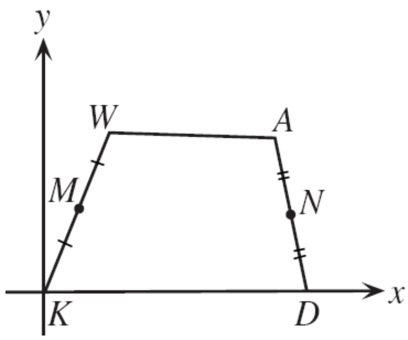
[109]. $f(x) = \dfrac{1-e^{-x}}{x},\ (x \neq 0) \Rightarrow f'''(0) = ?$

[110]. $\dfrac{d}{dx}\left(x^{x^{\cdot^{\cdot}}}\right) = ?$

[111]. $\displaystyle\sum_{k=1}^{n}\frac{1}{k}\left({}_nC_k+1\right) = \sum_{k=1}^{n}\frac{2^k}{k}$ 임을 증명.

[112]. $\{a_n\}$: 양항수열 $\Rightarrow \displaystyle\lim_{n\to\infty}\frac{a_{n+1}}{a_n} = \lim_{n\to\infty}\sqrt[n]{a_n}$ 임을 증명.

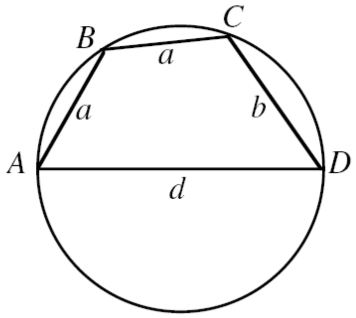
[113]. $MN = \dfrac{1}{2}(WA+KD) \Rightarrow WA \,//\, KD$ 임을 증명.



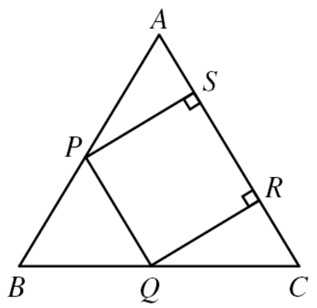
[114]. $\dfrac{d^n}{dx^n}\left(\tan^{-1}x\right) = ?$

[115]. $f(x) = \left(x^n - 1\right)^n \Rightarrow f^{(n)}(1) = ?$

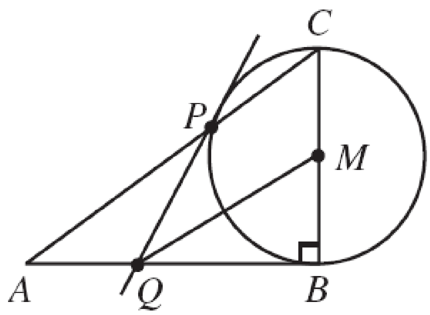
[116]. $a, b, d \in N,\ a \neq b \Rightarrow d$: 소수가 아님을 증명.



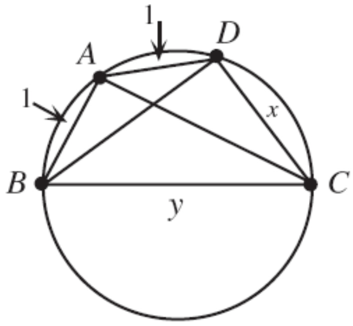
[117]. 한 변이 2인 정삼각형 ABC 에서 점 P, Q, R은 각각 선분AB, BC, CA에서만 움직일 때, 정사각형$PQRS$ 점S의 자취는 BC에 평행함을 증명하여라.



[118]. $\overline{AC} \,//\, \overline{MQ}$ 임을 증명.



[119]. $x = \cos\angle ABC,\ \cos\angle BAD = -\dfrac{1}{3} \Rightarrow BC$: 지름임을 증명.



[120]. $\dfrac{(-1)^n}{n!}\displaystyle\int_1^2 (\ln x)^n\, dx = 2\sum_{k=1}^{n}\frac{(-\ln 2)^k}{k!} + 1$ 임을 증명.

[121]. $f(x) = x^2 + |x| \Rightarrow \displaystyle\int_0^{\pi} f(\cos x)\, dx = 2\int_0^{\frac{\pi}{2}} f(\sin x)\, dx$ 임을 증명.

[122]. $f'(x) = f(x) + 1 - x^2,\ f(0) = 2 \Rightarrow f(x) = ?$

[123]. $\dfrac{d^{1000}}{dx^{1000}}\left(xe^{-x}\right) = ?$

[124]. $f(x) = \sin(-2x) \Rightarrow \dfrac{f^{(2009)}(2\pi)}{256^{250}} = ?$

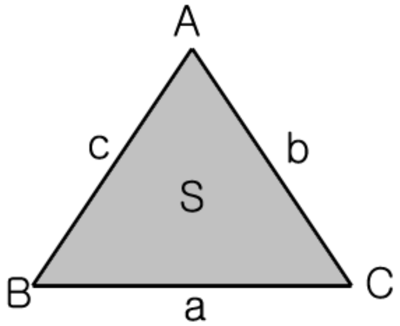
[125]. $\displaystyle\lim_{n\to\infty}\left(1 + \frac{1}{2} + \cdot\cdot + \frac{1}{n}\right) = \infty$ 임을 증명.

[126]. $\dfrac{d^n}{dx^n}\left(x^2 - x\right)\sin(x-1) = ?$

[127]. $x^n + y^n = (x+y)(x^{n-1} - x^{n-2}y + \cdot\cdot - xy^{n-2} + y^{n-1})$ 증명.(n:홀수)

[128]. $n(n+1)(n+2)(n+3)+1$ 완전제곱임을 증명.

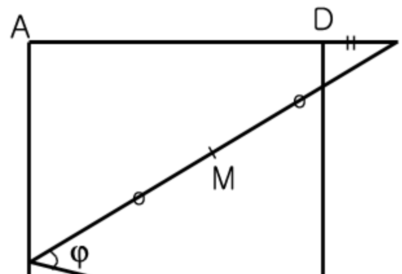
[129]. $4S(\cot A+\cot B+\cot C)=a^2+b^2+c^2$ 임을 증명.



[130]. $y''+2y'+4y=e^{2x}, y(0)=0, y'(0)=\dfrac{3-\sqrt{3}}{12} \Rightarrow y=?$

[131]. $\displaystyle\sum_{n=1}^{\infty}\frac{1}{n^n}=\int_0^1 x^{-x}\,dx$ 증명.

[132]. 정사각형ABCD에서 $M\in\overline{BD}$ 임을 증명하고 $\varphi=?$.



[133]. $(p,q)=1, \dfrac{p}{q}=1-\dfrac{1}{2}+\dfrac{1}{3}-\cdot\cdot+\dfrac{1}{1319} \Rightarrow 1979|p$ 증명.

[134]. $1+\dfrac{1}{2}+\cdot\cdot+\dfrac{1}{n}=\displaystyle\sum_{k=1}^{n}\frac{(-1)^{k-1}}{k}\cdot{}_nC_k$ 임을 증명.

[135]. $y'' - y' = \dfrac{e^x + e^{-x}}{2}$, $y(0) = 1, y'(0) = 0 \Rightarrow y = ?$

[136]. $x \bullet \dfrac{dy}{dx} + y = x\ln x \Rightarrow y = ?$

[137]. $(x^2 \cos x - y)dx + xdy = 0 \Rightarrow y = ?$

[138]. $y'' + y' + y = \sin 2x \Rightarrow y = ?$

[139]. $y'' + y = \cos x + 3\sin 2x \Rightarrow y = ?$

[140]. $y'' - 6y' + 13y = e^{3x}\sin x \Rightarrow y = ?$

[141]. $y' + \dfrac{y}{x} = x^2 y^3 \Rightarrow y = ?$

[142]. $y'' + 2y' + 2y = xe^{-2x} \Rightarrow y = ?$

[143]. $y'' - 2y' + 5y = e^x \cos 2x \Rightarrow y = ?$

[144]. $\begin{cases} \dfrac{dx}{dt} = 3y \\ \dfrac{dy}{dt} = x - z \\ \dfrac{dz}{dt} = -y \end{cases} \Rightarrow x(t) = ?,\ y(t) = ?,\ z(t) = ?$

[145]. $xg(f(x))f'(g(x))g'(x) = f(g(x))g'(f(x))f'(x)$,

$\int_0^a f(g(x))dx = 1 - \dfrac{e^{-2a}}{2}$, $g(f(0)) = 1 \Rightarrow g(f(4)) = ?$

[146]. $\min\left\{\int_{a}^{a^2} \frac{1}{x+\sqrt{x}}\,dx\right\} \Rightarrow a = ?, (a>0)$

[147]. ${}_{2n}C_{n+1} + {}_{2n}C_{n} = \left(\frac{1}{2}\right) \bullet {}_{2n+2}C_{n+1}$ 증명.

[148]. $\sin^2 20^\circ \sin 40^\circ = \sin 10^\circ \sin 30^\circ \sin 60^\circ$ 증명.

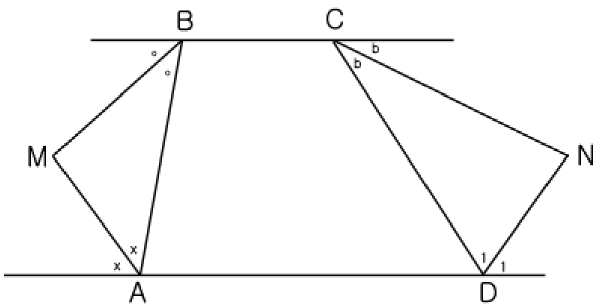
[149]. $\frac{1+\sin x-\cos x}{1+\sin x+\cos x} = \tan\left(\frac{x}{2}\right)$ 증명.

[150]. $xy^2 y' = y+1 \Rightarrow y = ?$

[151]. $xyz = 1 \Rightarrow \frac{x}{xy+x+1} + \frac{y}{yz+y+1} + \frac{z}{zx+z+1} = 1$ 증명.

[152]. $z = \tan\left(\frac{x}{2}\right) \Rightarrow \cos x = \frac{1-z^2}{1+z^2}$ 증명.

[153]. $\overline{MN} = \frac{\overline{AB}+\overline{BC}+\overline{CD}+\overline{DA}}{2}$ 증명.



[154]. $\frac{\tan x}{1-\cot x} + \frac{\cot x}{1-\tan x} = 1 + \sec x \operatorname{cosec} x$ 임을 증명.

[155]. $a+b+c=\pi \Rightarrow 4\sin a \sin b \sin c = \sin 2a + \sin 2b + \sin 2c$ 증명.

[156]. $\dfrac{1+\sin x}{\cos x} = \dfrac{\tan x + \sec x - 1}{\tan x - \sec x + 1}$ 증명.