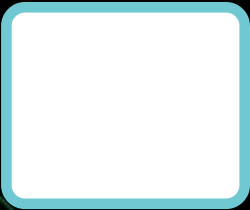
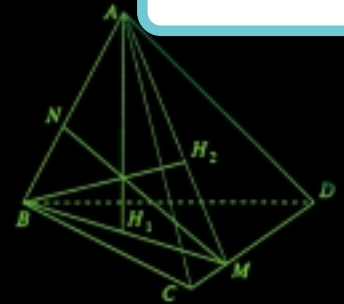


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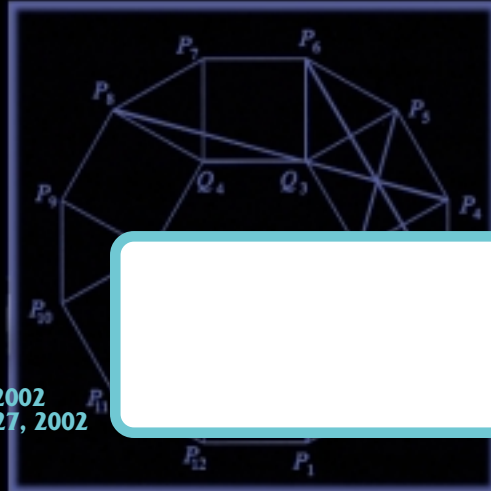


$$\sum_{i=1}^n a_i^2 \cdot \sum_{i=1}^n b_i^2 \geq \left( \sum_{i=1}^n a_i b_i \right)^2$$



$$-\frac{1}{2} \leq \frac{(x+y)(1-xy)}{(1+x^2)(1+y^2)} \leq \frac{1}{2}$$

$$(\cos \alpha + i \sin \alpha)^n = \cos n\alpha + i \sin n\alpha.$$



$$\sin a - \sin b = 2 \sin \frac{a-b}{2} \cos \frac{a+b}{2}$$

$$-2 \sin \frac{a-b}{2} \sin \frac{a+b}{2}$$

$$\frac{\sin(a-b)}{\cos a \cos b}$$

**2002 AMC contest dates:**

AMC 10 & AMC 12 - TUESDAY, February 12, 2002  
 or WEDNESDAY, February 27, 2002

AIME - TUESDAY, March 26, 2002  
 or TUESDAY, April 9, 2002

USAMO - THURSDAY-SUNDAY, May 9-12, 2002

AMC 8 - TUESDAY, November 19, 2002

www.unl.edu/amc amcinfo@unl.edu

$$\frac{BC}{\sin A} = \frac{CA}{\sin B} = \frac{AB}{\sin C} = 2R$$

$$\sum_{k=1}^5 kx_k = a,$$

$$\sin 3a = 3 \sin a - 4 \sin^3 a$$

$$\cos 3a = 4 \cos^3 a - 3 \cos a$$

$$\tan 3a = \frac{3 \tan a - \tan^3 a}{1 - 3 \tan^2 a}$$

$$\sum_{k=1}^5 k^3 x_k = a^2,$$

$$\sum_{k=1}^5 k^5 x_k = a^3.$$

$$\frac{x-x^{-1}}{1} < \frac{x^2-x^{-2}}{2} < \frac{x^3-x^{-3}}{3} < \dots < \frac{x^n-x^{-n}}{n} < \dots$$

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**American Mathematics Competitions**

$$\sqrt{s(s-a)(s-b)(s-c)},$$

$$\frac{f'(c)}{f'(a)} = \frac{a-\theta}{b-\theta}$$

$$\frac{1}{n} \sum_{i=1}^n a_i \geq (a_1 a_2 \dots a_n)^{1/n}$$

$$\sin a = \frac{2 \tan \frac{a}{2}}{1 + \tan^2 \frac{a}{2}}$$

$$\cos a = \frac{1 - \tan^2 \frac{a}{2}}{1 + \tan^2 \frac{a}{2}}$$

$$\tan a = \frac{2 \tan \frac{a}{2}}{1 - \tan^2 \frac{a}{2}}$$

$$\left| \int_0^1 f(x) dx \right| \leq \frac{1-a}{2} \sup_{x \in (0,1)} |f'(x)|$$

Presented by The Akamai Foundation

$$\prod_{n=2}^{\infty} \frac{n^3-1}{n^3+1} = \frac{2}{3}$$

$$\prod_{n=2}^{\infty} \frac{n^3-1}{n^3+1} = \lim_{N \rightarrow \infty} \prod_{n=2}^N \frac{n^3-1}{n^3+1} = \lim_{N \rightarrow \infty} \prod_{n=2}^N \frac{(n-1)(n^2+n+1)}{(n+1)(n^2-n+1)}$$

$$= \lim_{N \rightarrow \infty} \prod_{n=2}^N \frac{n-1}{n+1} \prod_{n=2}^N \frac{(n+1)^2 - (n+1) + 1}{n^2 - n + 1}$$

$$= \lim_{N \rightarrow \infty} \frac{1 \cdot 2 \cdot \dots \cdot ((N+1)^2 - (N+1) + 1)}{3N(N+1)} = \frac{2}{3}$$

$$\binom{n}{k} = \frac{n!}{k!(n-k)!}$$



**MAA AMC 10**

**MAA AMC 12**

Tuesday, February 12, 2002 or Wednesday, February 27, 2002