Tips and Review

I General Tips

II Time and study advise

III Some review

September 15, 2003
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Math21b, Fall, 2003

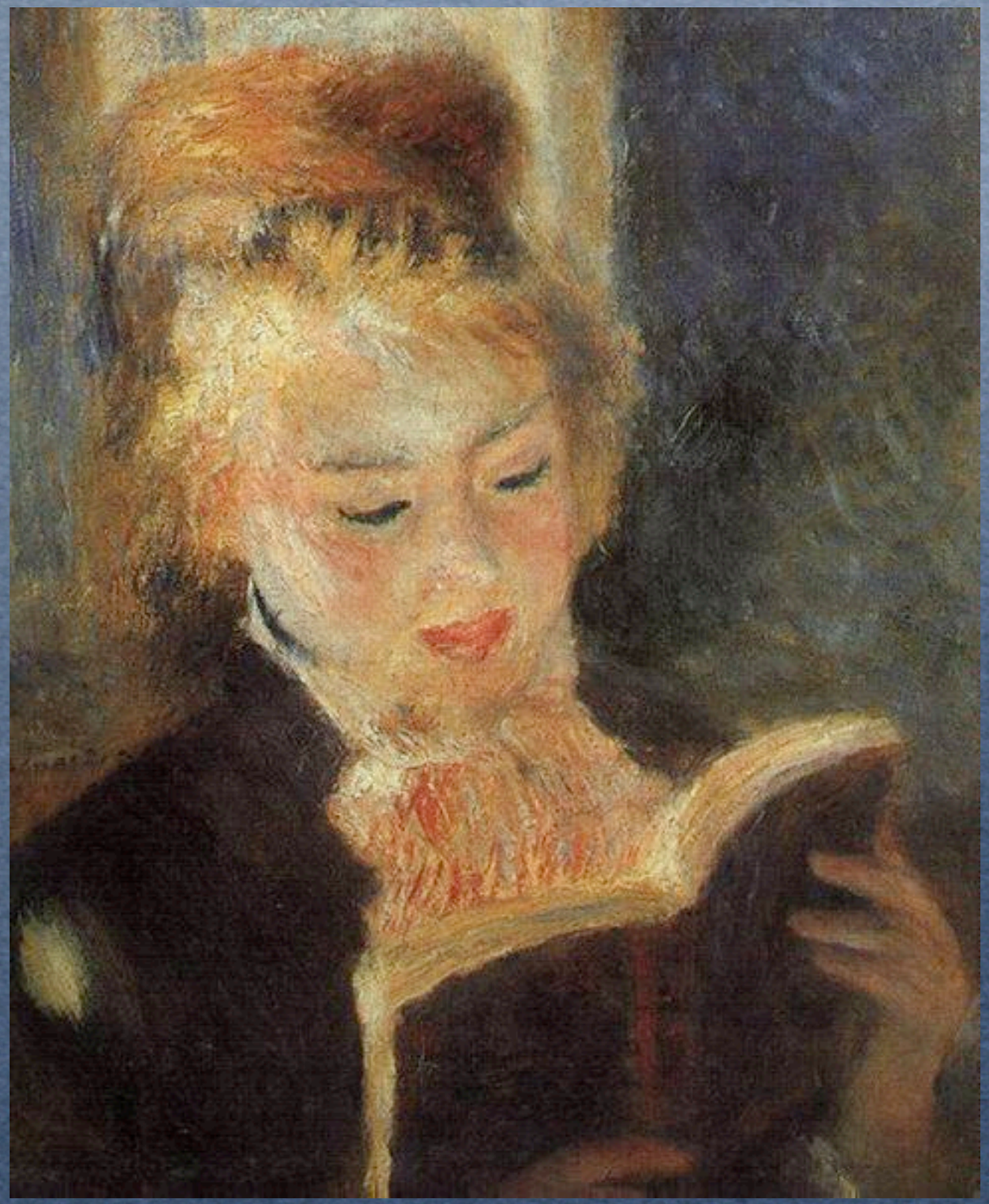
Work the problems!

Come to Lectures!

Ask Questions

Get Involved

Read the book



La liseuse, Pierre-August Renoir (1875)

Be Prepaired

Discuss Material

Keep Notes

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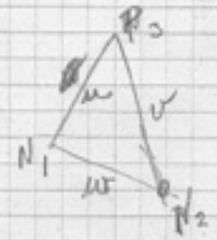
Kinetic energy $= -\frac{2\hbar^2}{M} S_{12}$

Potential energy ~~$V(r_1)+V(r_2)+V(r_3)$~~
$A(u) + \sigma_1\cdot\sigma_3\, B(u) + A(v) + \sigma_2\cdot\sigma_3\, B(v) + C(w) + \sigma_1\cdot\sigma_2$



Symmetry

$\psi(u\,v\,w) = \pm\psi(v,u,w)$

+ sign associated with spin function

$\frac{(-++)+(+-+)-2(++-)}{\sqrt{6}}$

– sign associated with spin function $(+++)$

$\sigma_1\cdot\sigma_2 = \xi_1\xi_2 + \frac{1}{2}(\xi_1+i\eta_1)(\xi_2-i\eta_2) + \frac{1}{2}(\xi_1-i\eta_1)(\xi_2+i\eta_2)$

~~$(\sigma_1\cdot\sigma_2)(+++) =$~~

$\xi \begin{vmatrix} 1/2 & 0 \\ 0 & -\frac{1}{2} \end{vmatrix}$ $\qquad \xi+i\eta\ \xi = \begin{vmatrix} 0 & 1 \\ 0 & 0 \end{vmatrix}$ $\begin{vmatrix} 0 & 0 \\ 1 & 0 \end{vmatrix}$

$\sigma_1\cdot\sigma_2(++) = \frac{1}{4}(++)$

$\sigma_1\cdot\sigma_2(+-) = -\frac{1}{4}(+-) + \frac{1}{2}(-+)$

$\sigma_1\cdot\sigma_2(-+) = -\frac{1}{4}(-+) + \frac{1}{2}(+-)$

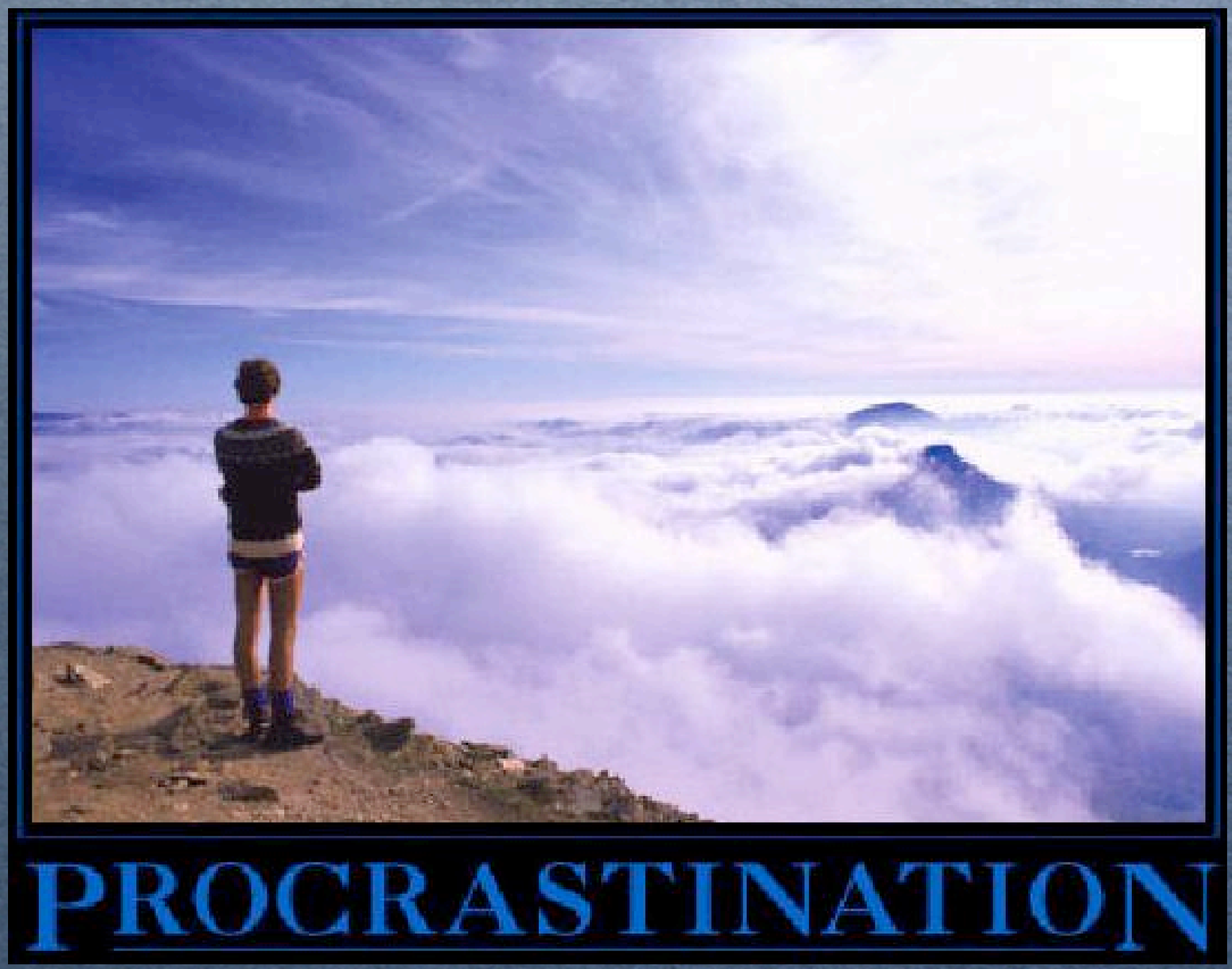
$\sigma_1\cdot\sigma_2(--) = \frac{1}{4}(--)$

Group Collaboration

Live Beyond Classes

Timemanagement

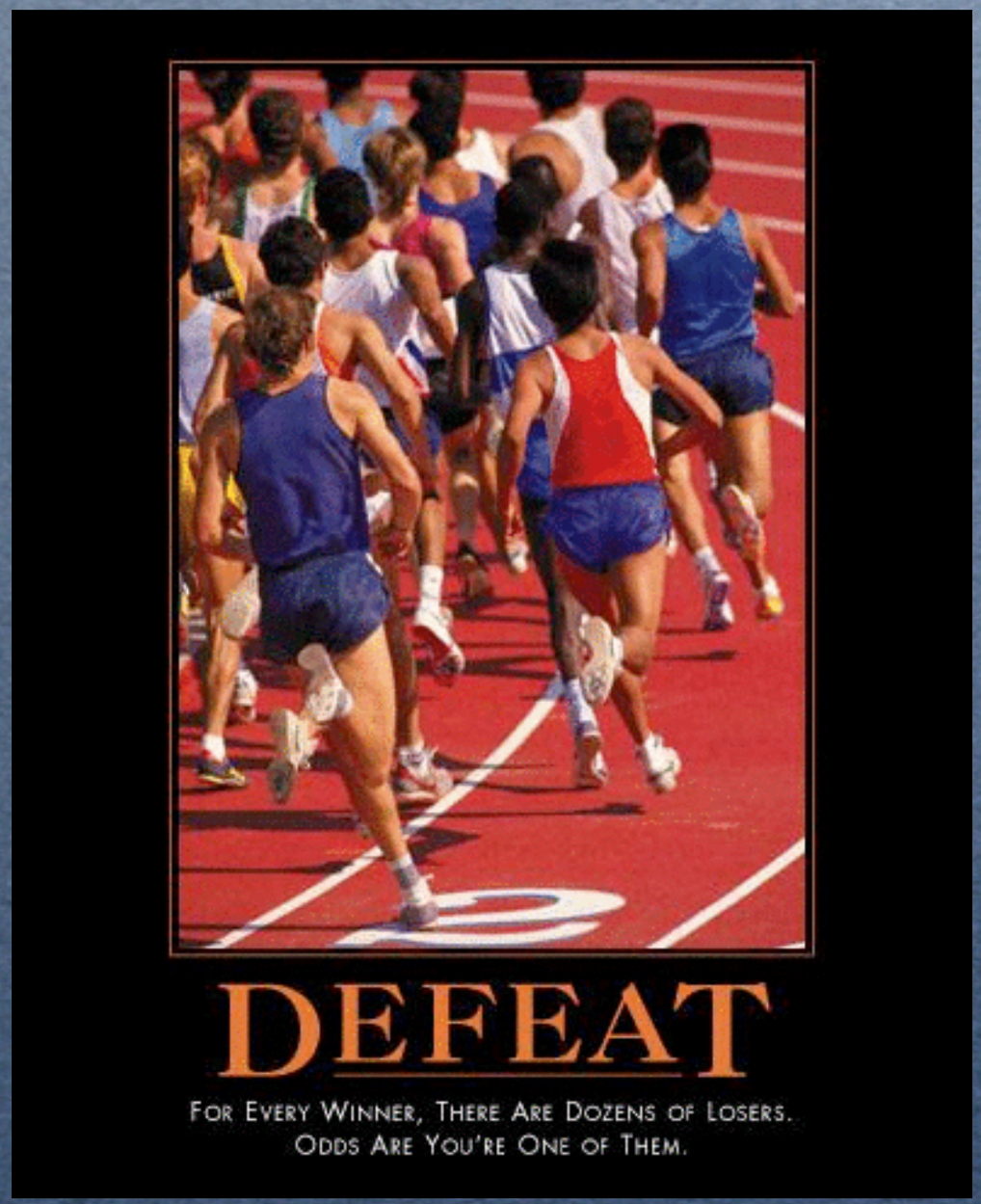
Do Homework Early



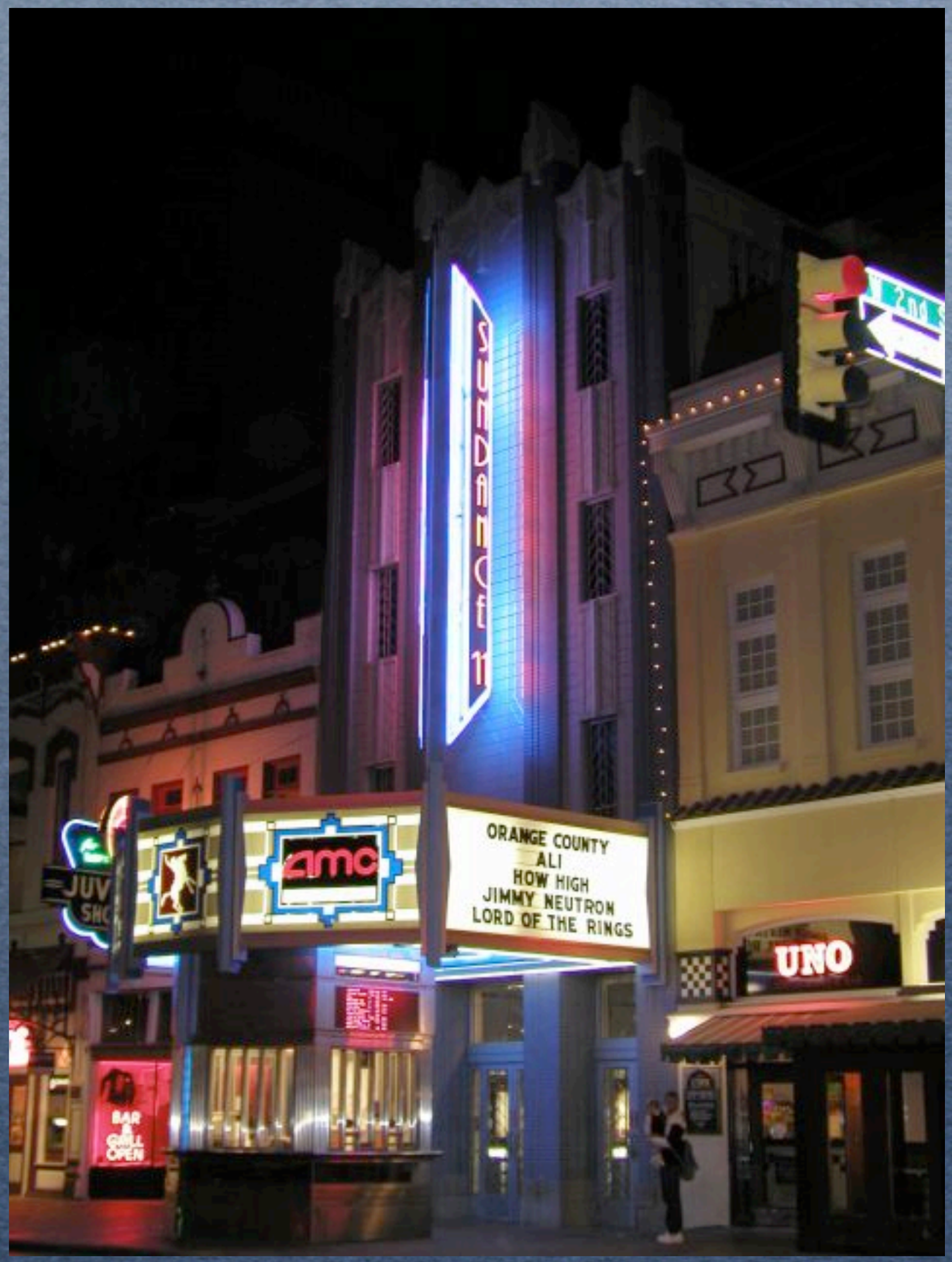
Hard Work Often Pays Off After Time,
But Laziness Always Pays Off Now

Catch Up

The sooner you fall behind, the more time you have to catch up.



See The Show


amc
ORANGE COUNTY
ALI
HOW HIGH
JIMMY NEUTRON
LORD OF THE RINGS
UNO
BAR & GRILL OPEN

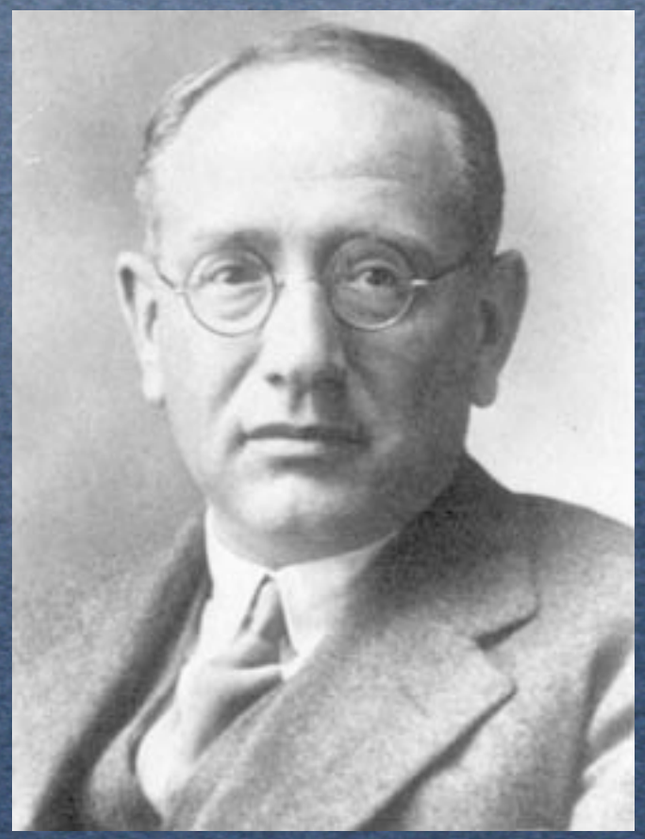
Practice Problem Solving

Learn to say NO.

Polya: “How to solve it”

- Understand the problem.
- Plan: Solve subproblems, connect to old problems
- Walk along plan while controlling each step
- Check the result. Result obvious? Method useful?

George Polya: (1887-1985)



Use Free CPU Cycles

Sleep Enough

Computer Science

Business Math

Physics

Bio + Chem

Single-variable Calculus

Multi-variable Calculus

Linear Algebra

Geometry

Number Theory

ODE's PDE's

Stat-istics

Topology

Analysis

Proba-bility

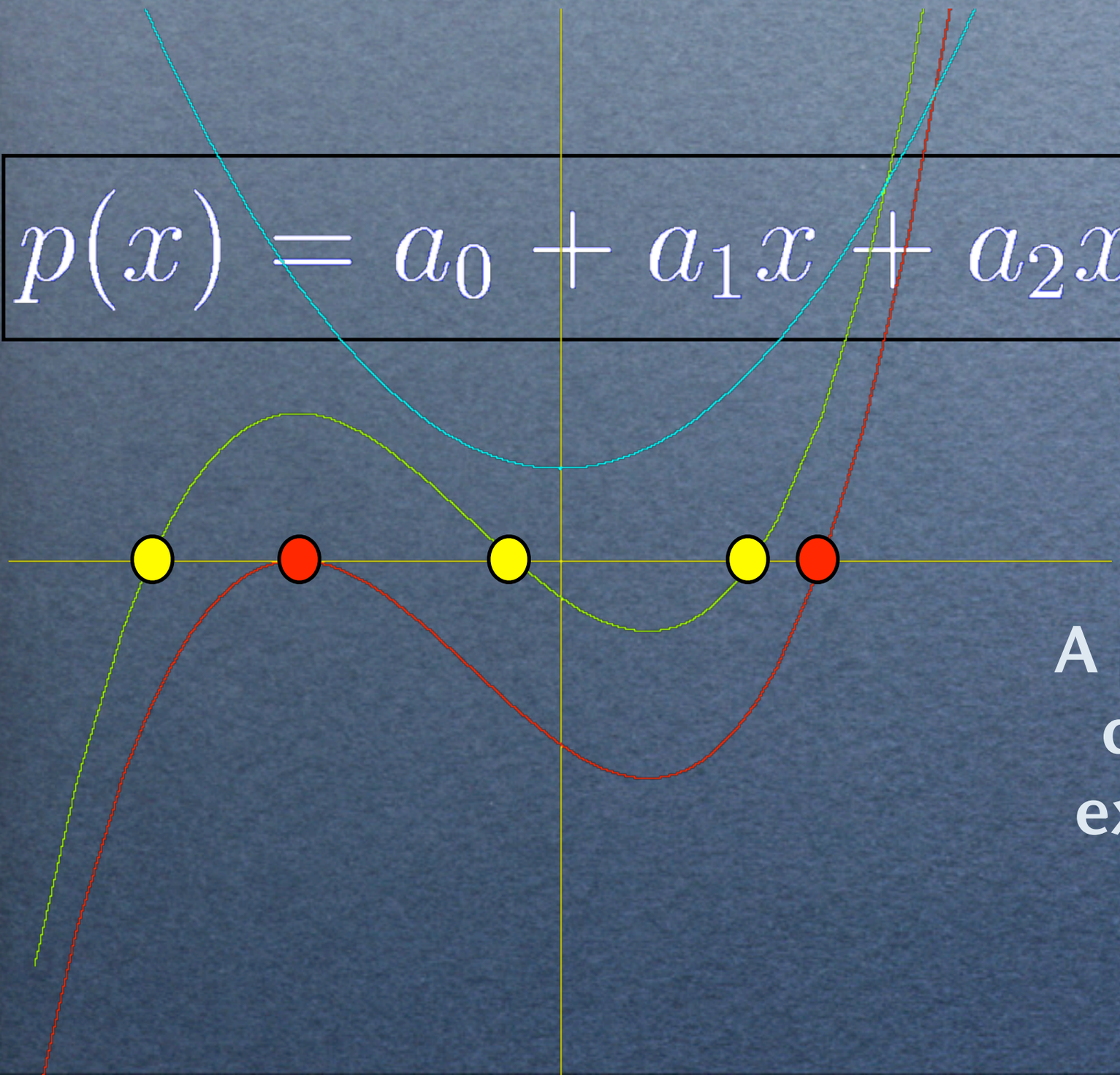
Dynamics

Algebra

Numerics

Polynomials

$$p(x) = a_0 + a_1 x + a_2 x^2 + \ldots + a_n x^n$$



A polynomial of degree n has exactly n roots p(x)=0

Derivatives

$$\frac{d}{dt}x(t) = F(x(t))$$

Integration

$$\frac{d}{dx}\int_a^x f(y)\,dy = f(x)$$

$$\int \sin(x)\,dx = -\cos(x)$$

$$\int \cos(x)\,dx = \sin(x)$$

$$\int x^n\,dx = \frac{x^{n+1}}{n+1}$$

Series

$$\sum_{k=0}^{\infty} a_n x^n$$

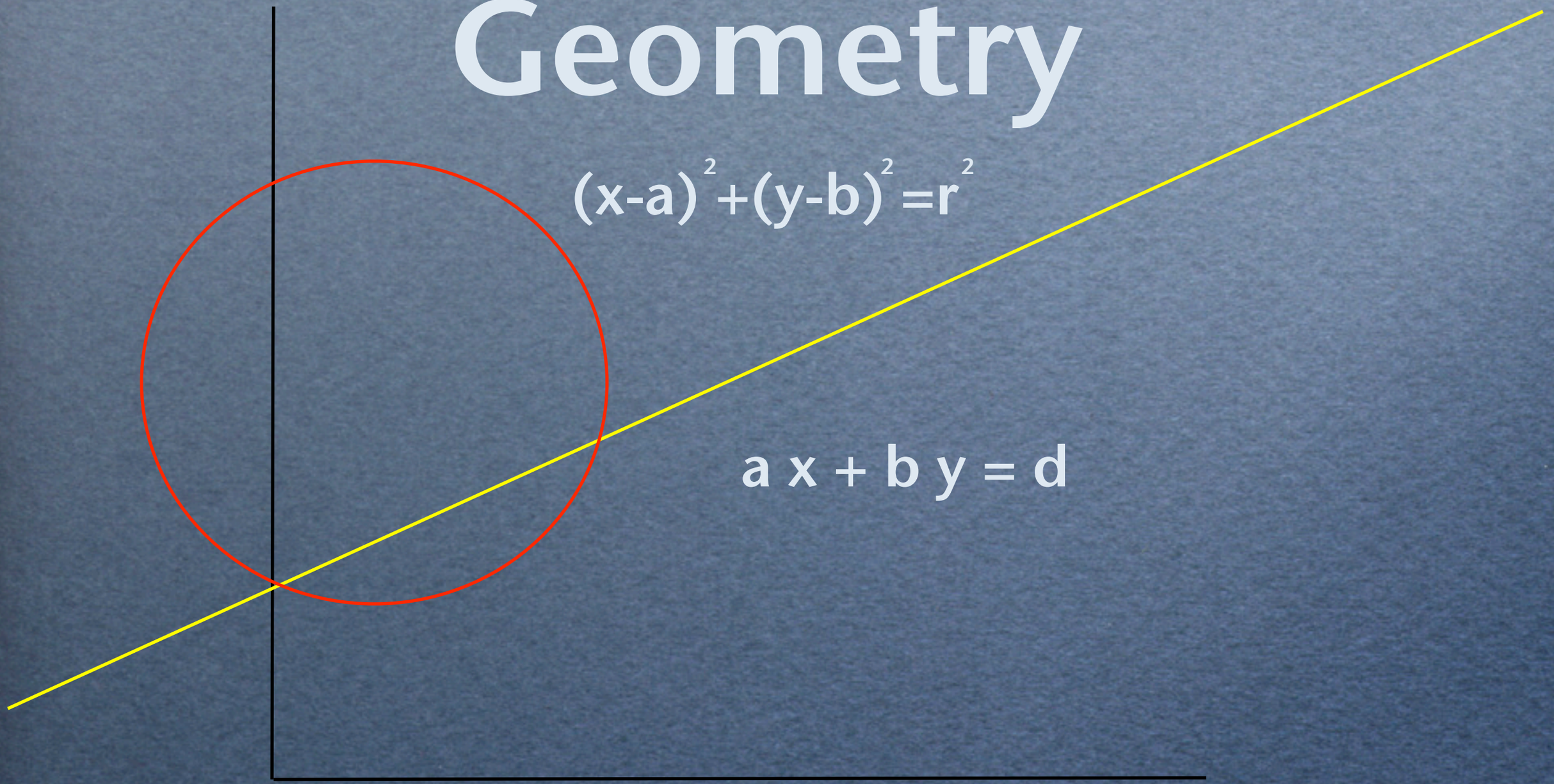
$$\sum_{k=0}^{\infty} a_n \sin(nx)$$

Numbers

$$\mathbb{N},\ \mathbb{Z},\ \mathbb{Q},\ \mathbb{R},\ \mathbb{C}$$

Geometry

$$(x-a)^2+(y-b)^2=r^2$$



$$a\,x + b\,y = d$$