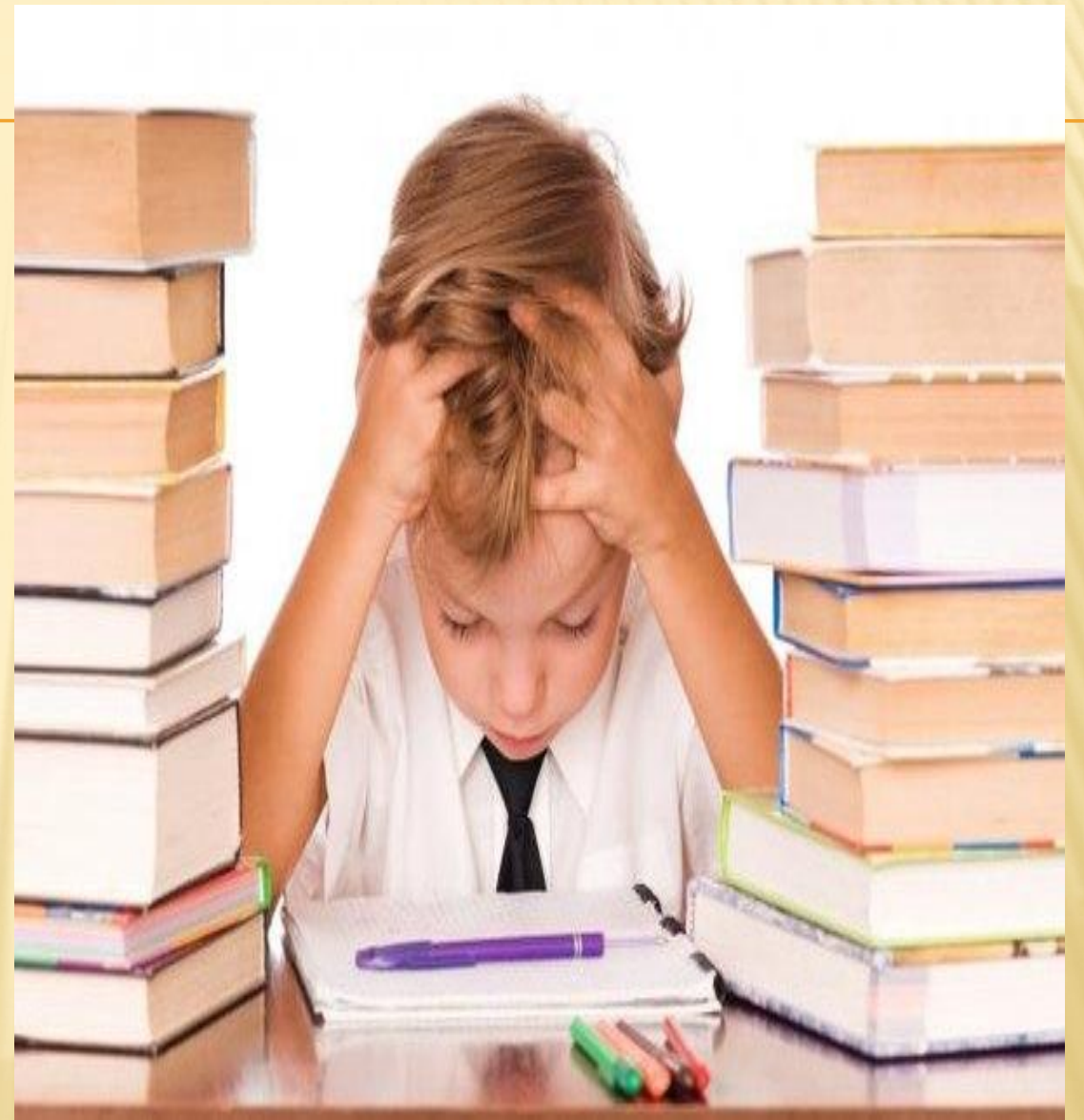


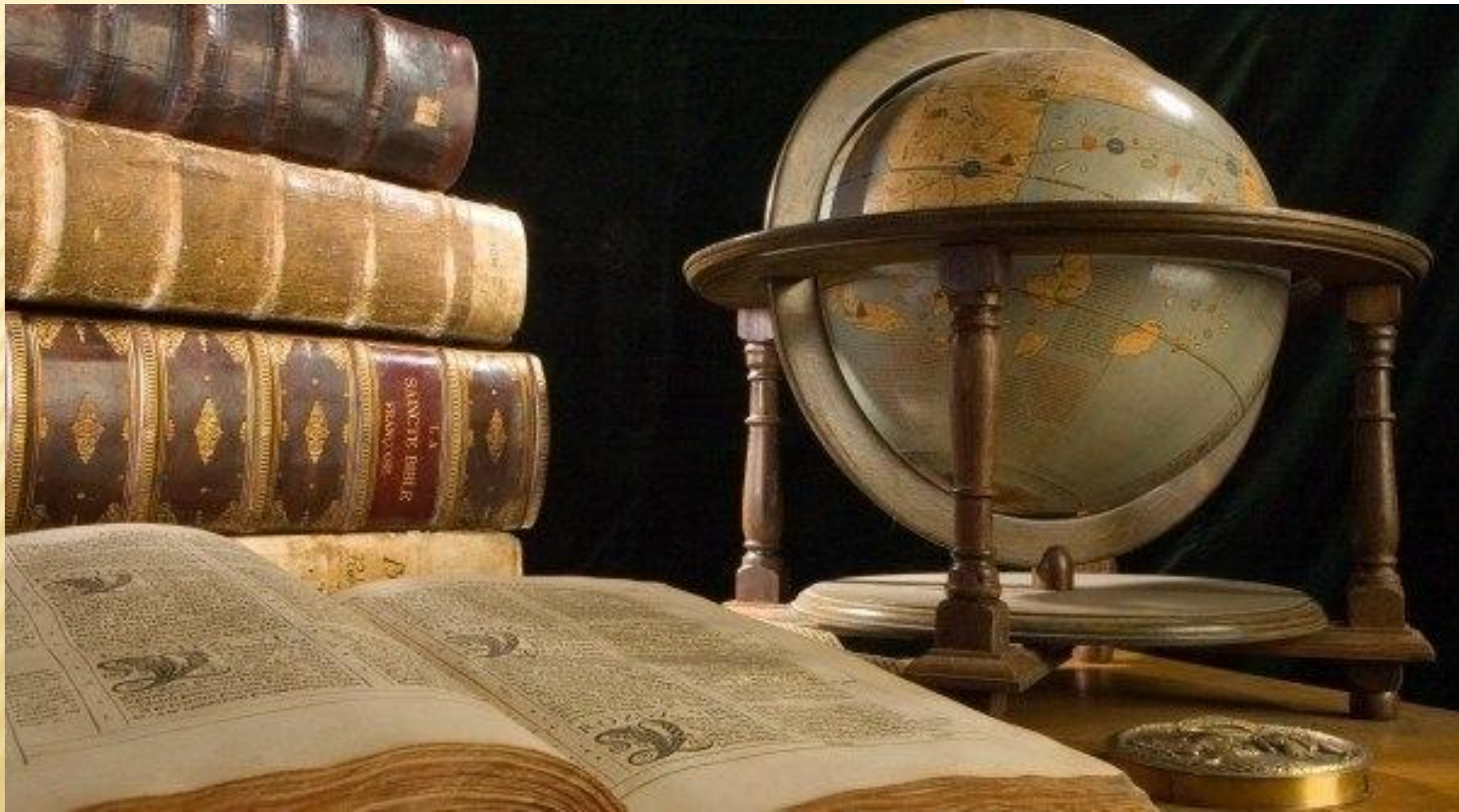
ПРАЗДНИК НАУКИ 2021











$r = \sin \theta$ for $0 \leq \theta \leq \pi/2$: (12, 15, 16) $0 \leq \theta \leq \pi \rightarrow (3)$

$P_2 \cdot (V_1 - V_2) = \underline{\underline{P_2 (V_2 - V_1)}}$

$P dV = - \int P_2 (nR) \dots$
 $r = |\sin \theta|$ is

Because as θ is between πR and 2π , it retraces its steps.

$R(T_2 - T_1) = -nR \left[\frac{P_2 V_1}{nR} - \frac{P_2 V_2}{nR} \right] = 2(V_2 - V_1)$



θ	r
$7\pi/6$	$-1/2$
$4\pi/3$	$-\sqrt{3}/2$

θ	r
$\pi/6$	$1/2$
$\pi/3$	$\sqrt{3}/2$



$\frac{3}{2} nR (T_3 - T_2) = \frac{3}{2} nR \left[\frac{P_2 V_1}{nR} - \frac{P_2 V_2}{nR} \right]$

When $B=0$, $y=-3$
 $3 = A + B \cos \theta$
 $3 = A + B \cos \theta$ for $0 \leq \theta \leq \pi$

$r = \cos \theta$ for $0 \leq \theta \leq \pi/2$

begin when θ end π , $y=5$
 $5 = A + B \cos \theta$

$\Delta U = n C_V \Delta T = \dots$
 $(1/2, 0) = \text{begin}$
 $(0, \pi/2) = \text{end}$

$= \frac{1}{2} \dots$



$5 = A - B$

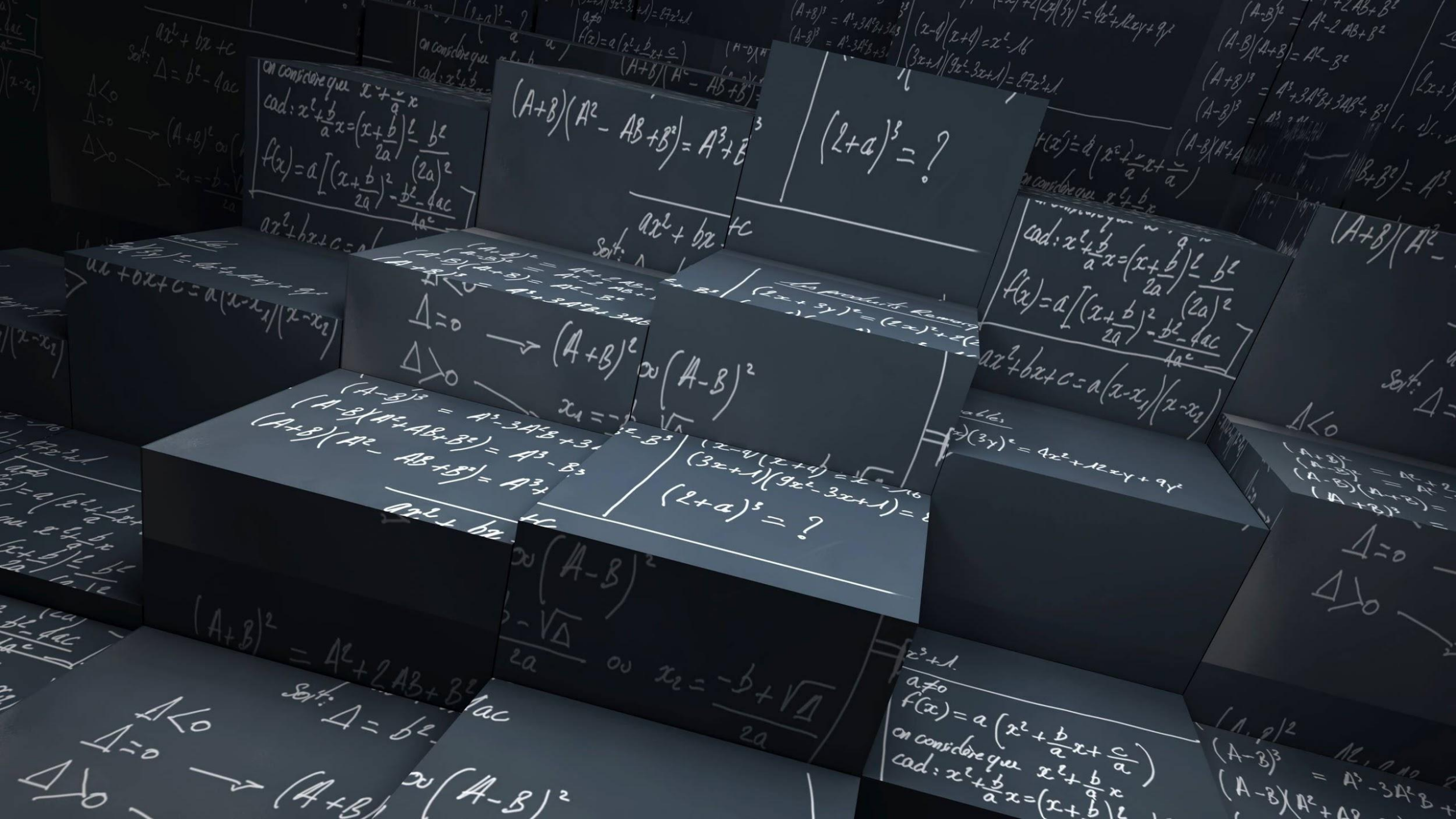


Handwritten physics notes on a chalkboard, covering various topics in electromagnetism and quantum mechanics. The notes include:

- Electromagnetism:** Calculations for magnetic fields and forces, such as $N_A = \frac{E_0 \mu_0 I L}{r}$ and $F_B = \frac{E_0 \mu_0 I^2 L}{2r}$. Diagrams show current-carrying wires and magnetic field lines.
- Wave Optics:** Calculations for diffraction patterns, including $\lambda = \frac{h}{p}$ and $2\pi r = n\lambda = \frac{nh}{m v}$.
- Quantum Mechanics:** Calculations for energy levels, such as $E_n = -\frac{13.6 \text{ eV}}{n^2}$, and wave functions $\Psi(r, \theta, \phi) = R_{nl}(r) Y_{lm}(\theta, \phi)$.
- Relativity:** Calculations for relativistic energy and momentum, including $E = mc^2$ and $E^2 = p^2 c^2 + m^2 c^4$.
- Mathematical Tools:** Various mathematical derivations and formulas, such as $\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$ and $\nabla \times \mathbf{E} = -\dot{\mathbf{B}}$.







$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

$$(2+a)^3 = ?$$

on considère que $x^2 + \frac{b}{a}x + \frac{c}{a}$
cad: $x^2 + \frac{b}{a}x = (x + \frac{b}{2a})^2 - \frac{b^2}{4a^2}$
 $f(x) = a[(x + \frac{b}{2a})^2 - \frac{b^2}{4a^2} - \frac{c}{a}]$

cad: $x^2 + \frac{b}{a}x = (x + \frac{b}{2a})^2 - \frac{b^2}{4a^2}$
 $f(x) = a[(x + \frac{b}{2a})^2 - \frac{b^2}{4a^2} - \frac{c}{a}]$

$\Delta = 0 \rightarrow (A+B)^2 \propto (A-B)^2$
 $\Delta > 0 \rightarrow x_1 = -\frac{b}{2a} - \frac{\sqrt{\Delta}}{2a}$

$$(2+a)^3 = ?$$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

$$(A+B)^2 = A^2 + 2AB + B^2$$

$\Delta < 0$
 $\Delta = 0$
 $\Delta > 0 \rightarrow (A+B)^2 \propto (A-B)^2$

$a \neq 0$
 $f(x) = a(x^2 + \frac{b}{a}x + \frac{c}{a})$
on considère que $x^2 + \frac{b}{a}x$
cad: $x^2 + \frac{b}{a}x = (x + \frac{b}{2a})^2 - \frac{b^2}{4a^2}$

$$(A-B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$\Delta < 0$
 $\Delta = 0$
 $\Delta > 0$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

$$(A-B)^2 = A^2 - 2AB + B^2$$

$$(A+B)^3 = A^3 + 3A^2B + 3AB^2 + B^3$$

$$(A-B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$$(A-B)(A^2 + AB + B^2) = A^3 - B^3$$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

Sol: $\Delta =$

$\Delta = 0$

$\Delta > 0$

$$(A-B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$$(A-B)(A^2 + AB + B^2) = A^3 - B^3$$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

$$(A+B)^2 = A^2 + 2AB + B^2$$

$$(A-B)^2 = A^2 - 2AB + B^2$$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

$$(A-B)(A^2 + AB + B^2) = A^3 - B^3$$

$$(A+B)^3 = A^3 + 3A^2B + 3AB^2 + B^3$$

$$(A-B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$$(A-B)(A^2 + AB + B^2) = A^3 - B^3$$

on considère que $x^2 + \frac{b}{a}x$

$$(2x+3y)^2 = 4x^2 + 12xy + 9y^2$$

$$(2x+3y)^2 = 4x^2 + 12xy + 9y^2$$

$$(A+B)^3 = A^3 + 3A^2B + 3AB^2 + B^3$$

$$(A-B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$$

$$(x-y)(x+y) = x^2 - y^2$$

$$(3x+1)(9x^2 - 3x + 1) = 27x^3 + 1$$

$$(x-y)(x^2 + xy + y^2) = x^3 - y^3$$

$$(x+y)(x^2 - xy + y^2) = x^3 + y^3$$

$$f(x) = a(x^2 + \frac{b}{a}x + \frac{c}{a})$$

$$(A+B)(A^2 - AB + B^2) = A^3 + B^3$$

on considère que $x^2 + \frac{b}{a}x$

$$cad: x^2 + \frac{b}{a}x = (x + \frac{b}{2a})^2 - \frac{b^2}{4a^2}$$

$$ax^2 + bx + c$$

Sol: $\Delta = b^2 - 4ac$

$$\Delta < 0$$

$$\Delta = 0$$

$$\Delta > 0$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$

$$ax^2 + bx + c = a(x-x_1)(x-x_2)$$











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