0.1 Ley de Coulomb

La ley de Coulomb establece de la fuerza F entre dos cargas Q_1 y Q_2 son:

- A lo largo de la linea que los une.
- Directamemte proporcional al producto Q_1Q_2 de las cargas.
- Inversamente proporcional a la distancia R que los separa

Teorema 0.1 — Ley de Coulomb.

$$F = \frac{kQ_1Q_2}{R^2} \tag{1}$$

Donde:

Q: Cargas en Coulombs(C).
- R: Distancia en metros(m).
- F: Fuerza Newtons(N).

Constantes:

$$\varepsilon_0 = 8.854 \times 10^{-12} \simeq \frac{10^{-9}}{36\pi} F/m \qquad k = \frac{1}{4\pi\varepsilon_0} \simeq 9 \times 10^9 m/F$$

Si las cargas Q_1 y Q_2 están localizadas en puntos cuyas posiciones están de forma vectorial r_1 y r_2(figura), así la fuerza de $\mathbf{F}_{12}$[1] sobre la carga 2 debido a la carga 1 esta dado por:

$$\boxed{F_{12} = \frac{Q_1Q_2}{4\pi\varepsilon_0 R^2}} \tag{2}$$

0.2 Intensidad de campo eléctrico

La intensidad de campo eléctrico E es la fuerza que una unidad de carga positiva experimenta cuando se coloca en un campo eléctrico.

Teorema 0.2 — Intensidad de campo eléctrico.

$$E = \frac{F}{Q} \tag{3}$$

Donde:
E: Intensidad de campo eléctrico(N/C) o Volts por metro(V/M).
- F: Fuerza(N)
- Q: Carga(Coulombs).

Para Q>0, la E esta en la misma dirección de la fuerza del F

---

[1]Se lee: La fuerza de la carga 1 a la carga 2

1.1 Theorems

This is an example of theorems.

1.1.1 Several equations

This is a theorem consisting of several equations.

> **Teorema 1.1 — Name of the theorem.** In $E = \mathbb{R}^n$ all norms are equivalent. It has the properties:
>
> $$\big|\,||\mathbf{x}|| - ||\mathbf{y}||\,\big| \leq ||\mathbf{x} - \mathbf{y}|| \tag{1.1}$$
>
> $$||\sum_{i=1}^{n} \mathbf{x}_i|| \leq \sum_{i=1}^{n} ||\mathbf{x}_i|| \quad \text{where } n \text{ is a finite integer} \tag{1.2}$$

1.1.2 Single Line

This is a theorem consisting of just one line.

> **Teorema 1.2** A set $\mathscr{D}(G)$ in dense in $L^2(G), |\cdot|_0$.

1.2 Definitions

This is an example of a definition. A definition could be mathematical or it could define a concept.

> **Definición 1.1 — Definition name.** Given a vector space E, a norm on E is an application, denoted $||\cdot||$, E in $\mathbb{R}^+ = [0, +\infty[$ such that:
>
> $$||\mathbf{x}|| = 0 \Rightarrow \mathbf{x} = \mathbf{0} \tag{1.3}$$
>
> $$||\lambda \mathbf{x}|| = |\lambda| \cdot ||\mathbf{x}|| \tag{1.4}$$
>
> $$||\mathbf{x} + \mathbf{y}|| \leq ||\mathbf{x}|| + ||\mathbf{y}|| \tag{1.5}$$

1.3 Notations

> ■ **Notación 1.1** Given an open subset G of $\mathbb{R}^n$, the set of functions φ are:
> 1. Bounded support G;

    2. Infinitely differentiable;

a vector space is denoted by $\mathscr{D}(G)$.

1.4 Remarks

This is an example of a remark.

> Ⓡ The concepts presented here are now in conventional employment in mathematics. Vector spaces are taken over the field $\mathbb{K} = \mathbb{R}$, however, established properties are easily extended to $\mathbb{K} = \mathbb{C}$.

1.5 Corollaries

This is an example of a corollary.

> **Corolario 1.1 — Corollary name.** The concepts presented here are now in conventional employment in mathematics. Vector spaces are taken over the field $\mathbb{K} = \mathbb{R}$, however, established properties are easily extended to $\mathbb{K} = \mathbb{C}$.

1.6 Propositions

This is an example of propositions.

1.6.1 Several equations

Proposición 1.1 — Proposition name. It has the properties:

$$\big|\,||\mathbf{x}|| - ||\mathbf{y}||\,\big| \leq ||\mathbf{x} - \mathbf{y}|| \tag{1.6}$$

$$||\sum_{i=1}^{n} \mathbf{x}_i|| \leq \sum_{i=1}^{n} ||\mathbf{x}_i|| \quad \text{where } n \text{ is a finite integer} \tag{1.7}$$

1.6.2 Single Line

Proposición 1.2 Let $f, g \in L^2(G)$; if $\forall \varphi \in \mathscr{D}(G)$, $(f, \varphi)_0 = (g, \varphi)_0$ then $f = g$.

1.7 Examples

This is an example of examples.

1.7.1 Equation and Text

∎ **Ejemplo 1.1** Let $G = \{x \in \mathbb{R}^2 : |x| < 3\}$ and denoted by: $x^0 = (1, 1)$; consider the function:

$$f(x) = \begin{cases} e^{|x|} & \text{si } |x - x^0| \leq 1/2 \\ 0 & \text{si } |x - x^0| > 1/2 \end{cases} \tag{1.8}$$

∎

1.7.2 Paragraph of Text

∎ **Ejemplo 1.2 — Example name.** Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris. ∎

1.8 Exercises

This is an example of an exercise.

Ejercicio 1.1 This is a good place to ask a question to test learning progress or further cement ideas into students' minds. ∎

1.9 Problems

Problema 1.1 What is the average airspeed velocity of an unladen swallow?

1.10 Vocabulary

- **Vocabulario 1.1 — Word.** Definition of word.

1.11 Table

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table 1.1: Table caption

Referencing Table **??** in-text automatically.

1.12 Figure

Figure 1.1: Figure caption

Referencing Figure **??** in-text automatically.