Parte 4

(B)

a) $2{,}01\,[ft]$

b) $1271 \times 10^2\,[m^2]$

c) $23 \times 10^4\,\left[\frac{cm}{s}\right]$

d) $\frac{13{,}7[g]}{8[cm]} = 1{,}7125\left[\frac{g}{cm}\right] \approx 2\left[\frac{g}{cm}\right]$

(C) Resuelto en clases

Parte 5: Resuelto en clases ; Parte 2: Resuelto en clases ; Parte 1: Resuelto en clases

Parte 3

A)

a) $F = kv^2 : \dim[k] = \frac{\dim[F]}{\dim[v^2]} = \frac{MLT^{-2}}{L^2T^{-2}} = ML^{-1}$

b) $x = At + Bt^2 : \dim[A] = \frac{\dim[x]}{\dim[t]} = LT^{-1}$; $\dim[B] = \frac{\dim[x]}{\dim[t^2]} = LT^{-2}$

c) $F = \frac{aP}{d} + bc^2 : \dim[a] = \frac{\dim[F]\dim[d]}{\dim[P]} = \frac{MLT^{-2} \cdot L}{MLT^{-2}L^{-2}} = L^{+3}$

B) $x = k a^m t^n$; $\dim[k] = 1$

$\dim[x] = \dim[k]\dim[a]^m \dim[t]^n$

$L = 1 \cdot (LT^{-2})^m T^n$

$L = L^m T^{-2m} T^n$

$L = L^m T^{-2m+n} \Rightarrow m = 1 \wedge -2m+n = 0 \Rightarrow n = 2$ //

c) $R = R(\rho, t, E)$

Suponemos una relación del tipo $R \propto \rho^A t^B E^C$

donde A, B y C son constantes.

$$\dim[R] = \dim[\rho]^A \dim[t]^B \dim[E]^C$$

$$L = (ML^{-3})^A T^B (ML^2T^{-2})^C$$

$$L = M^A L^{-3A} T^B M^C L^{2C} T^{-2C}$$

$$L = M^{A+C} L^{-3A+2C} T^{B-2C}$$

$$M^0 T^0 L^1 = M^{A+C} L^{-3A+2C} T^{B-2C}$$

Luego
$$\begin{aligned} A+C &= 0 \\ -3A+2C &= 1 \\ B-2C &= 0 \end{aligned}$$

Solución:
$$A = -\frac{1}{5}, \quad B = \frac{2}{5}, \quad C = \frac{1}{5}$$

$\therefore$ La relación es: $R \propto \rho^{-\frac{1}{5}} t^{\frac{2}{5}} E^{\frac{1}{5}}$ //