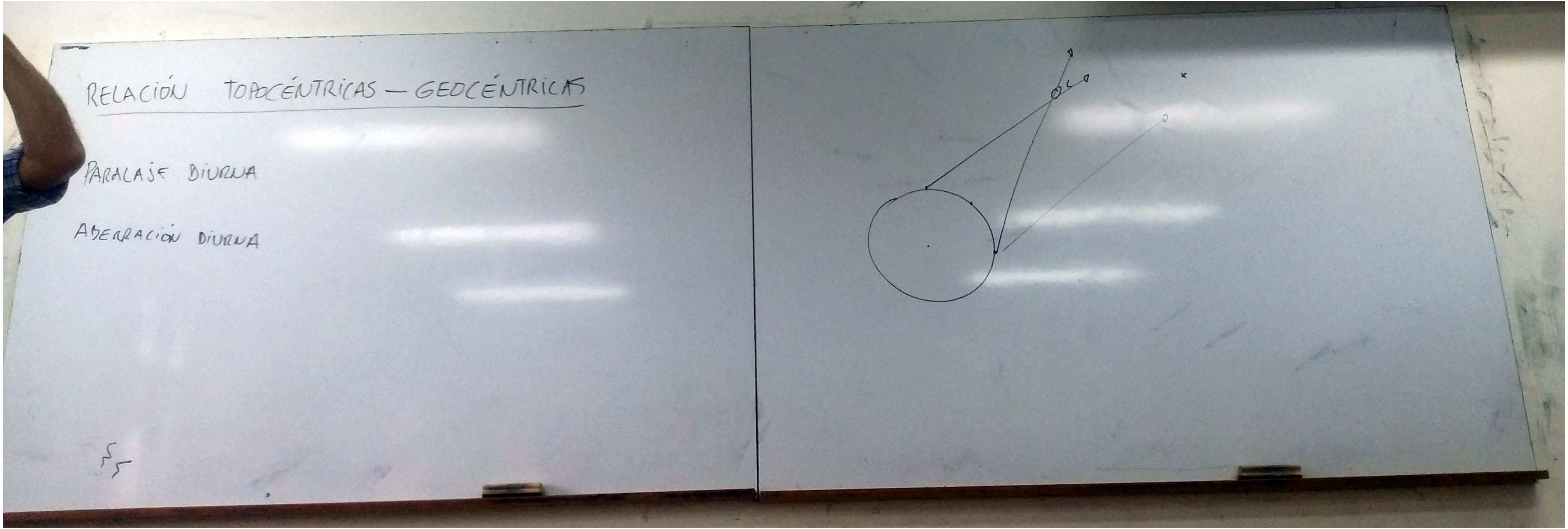
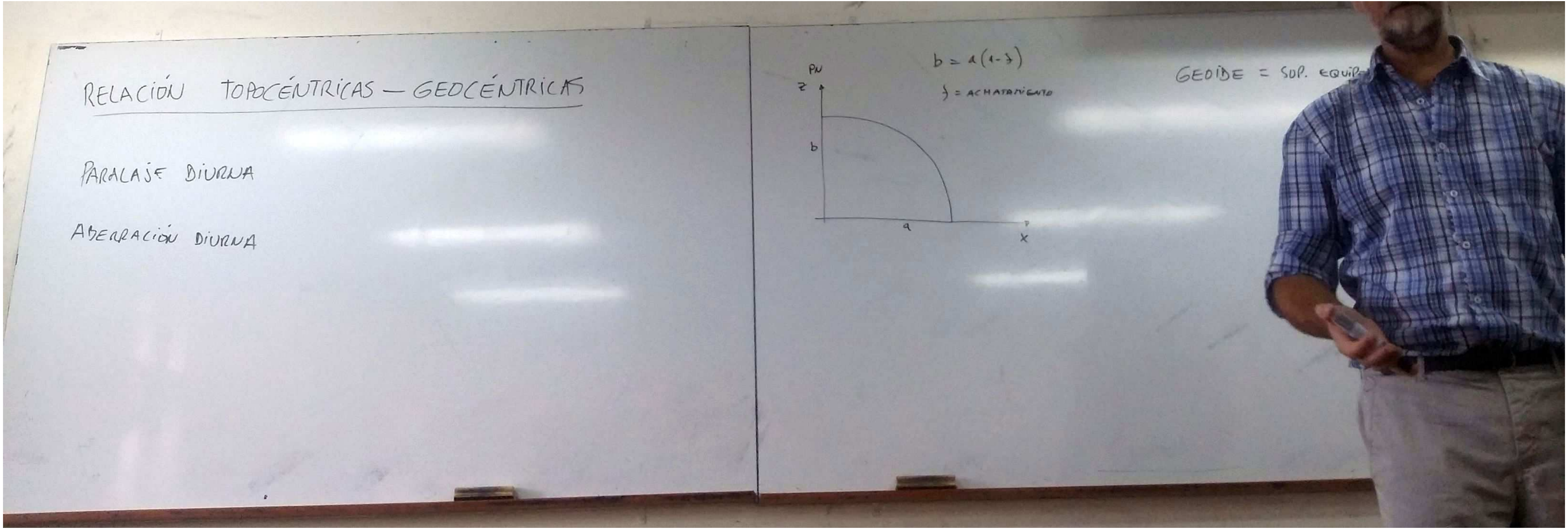
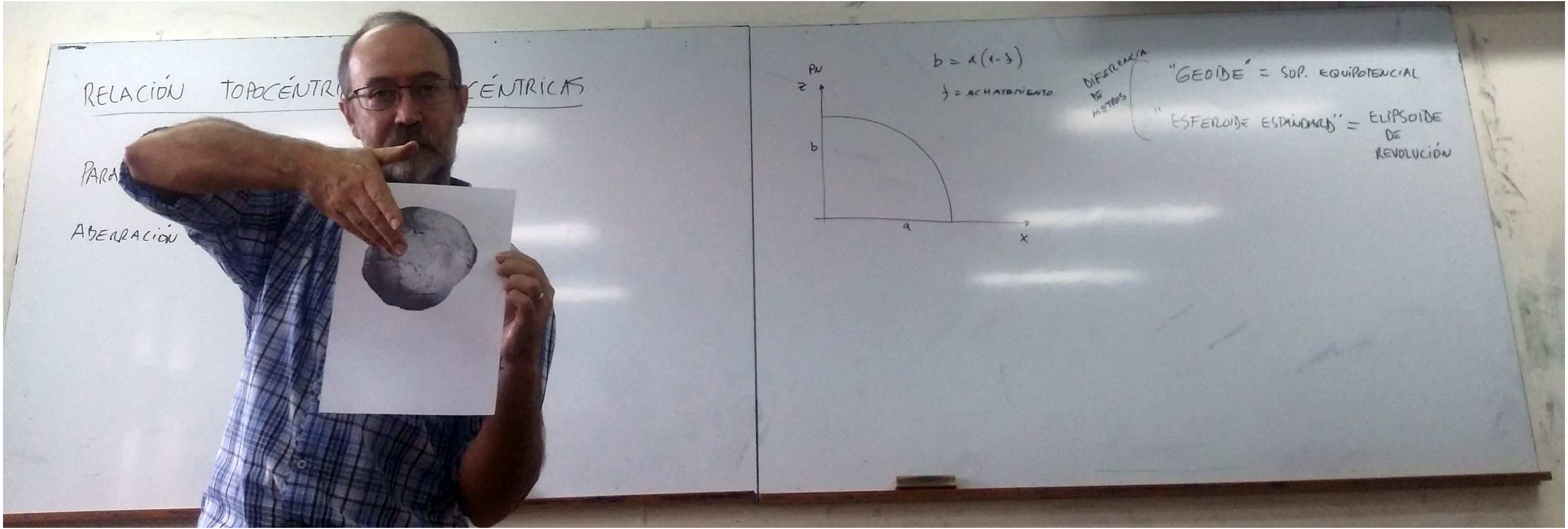
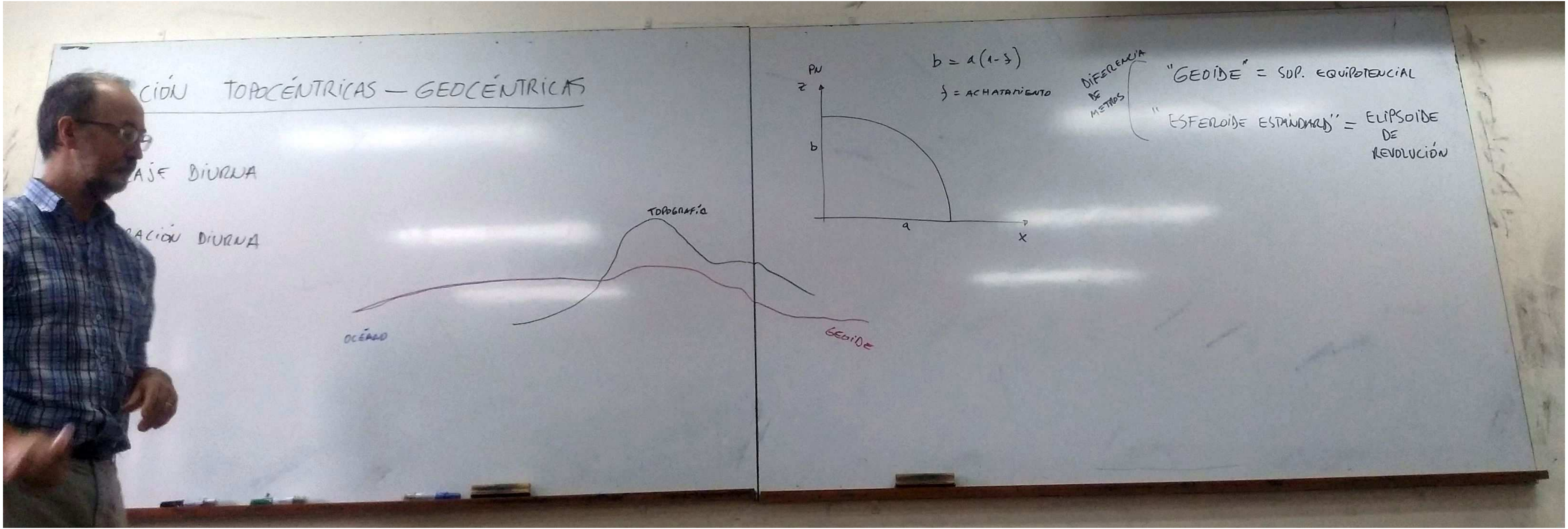
Astronomia Fundamental 2018 - clase 8

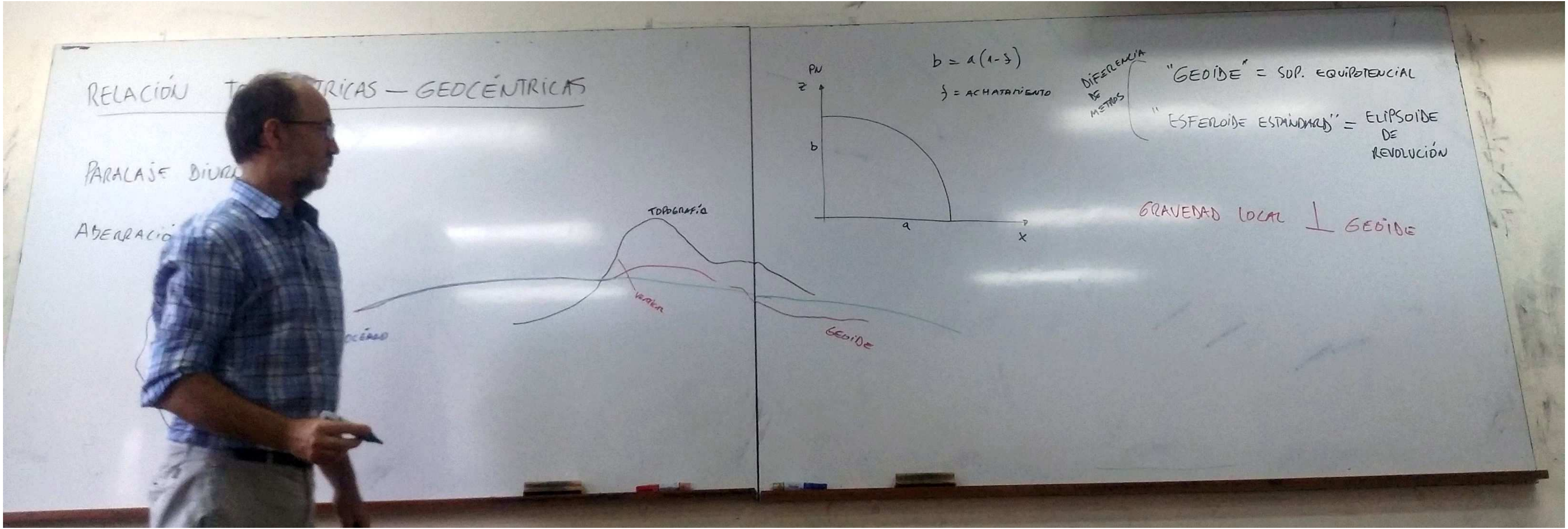



RELACIÓN TOPOCÉNTRICAS — GEOCÉNTRICAS
PARALAJE DIURNA
ABERRACIÓN DIURNA
b = a(1-f)
f = ACHATAMIENTO
PN
z
b
a
x
GEOIDE = SUP. EQUIP.

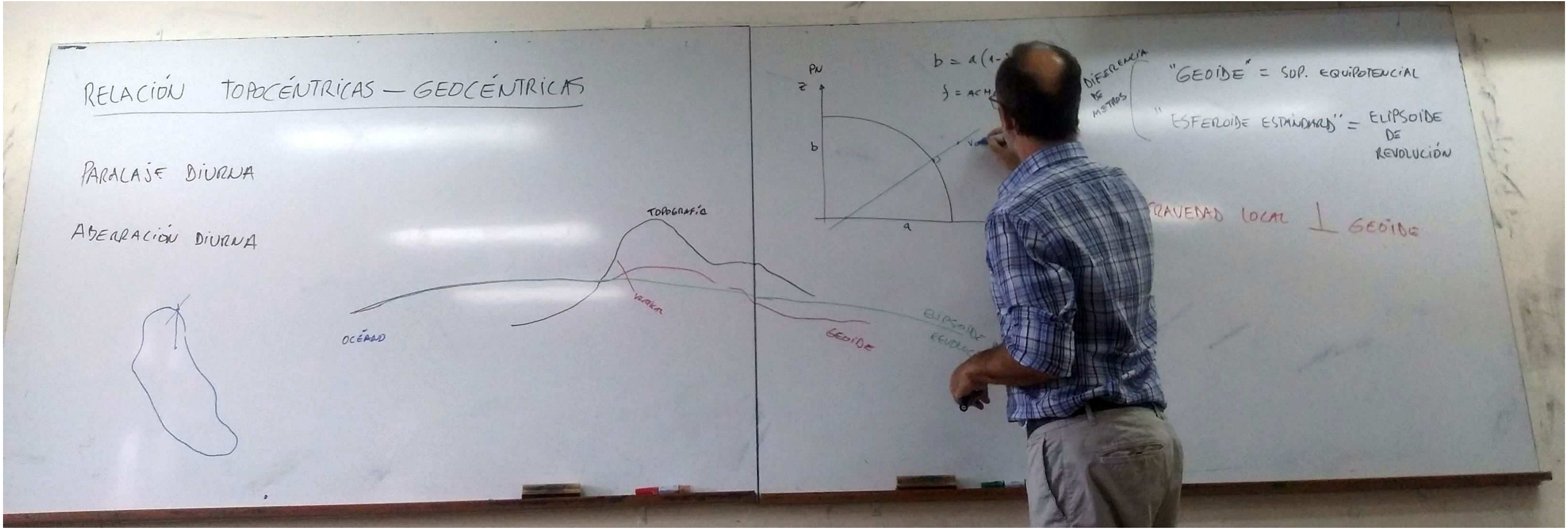

RELACIÓN
ABERRACIÓN
b = a(1-f)
f = ACHATAMIENTO
PN
z
b
a
x
DIFERENCIA DE METROS
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN

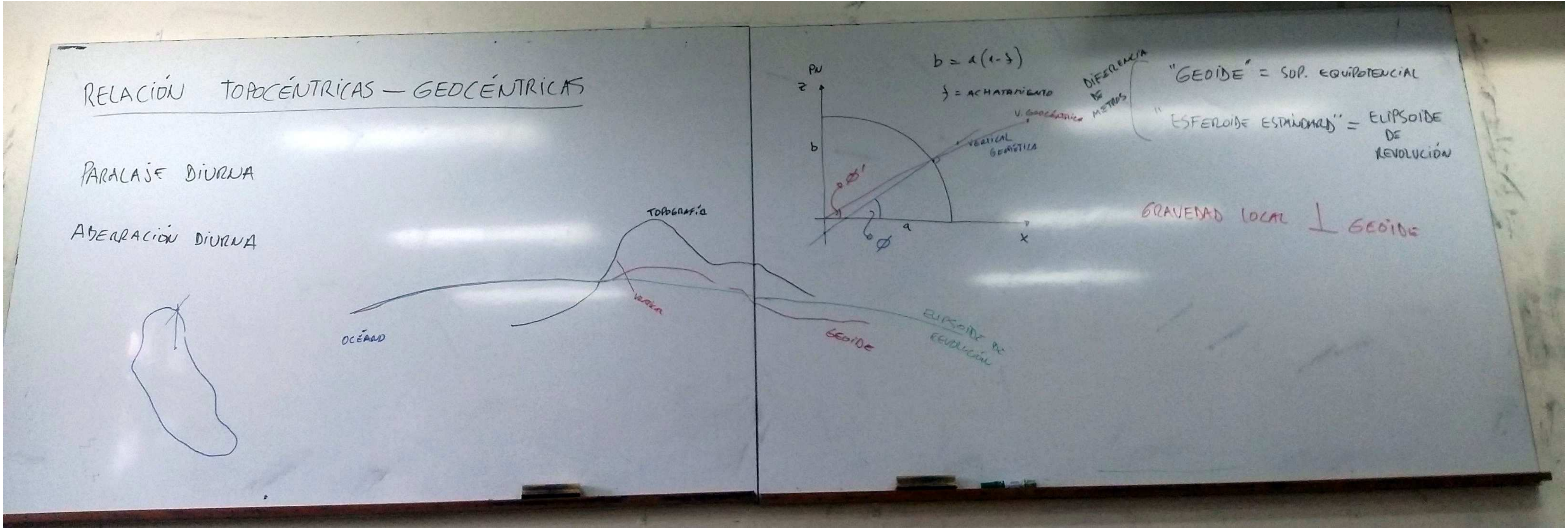

CIÓN TOPOCÉNTRICAS — GEOCÉNTRICAS
AJE DIURNA
RACIÓN DIURNA
TOPOGRAFÍA
OCÉANO
GEOIDE
b = a (1 - f)
f = ACHATAMIENTO
PN
z
b
a
x
DIFERENCIA DE METROS
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN

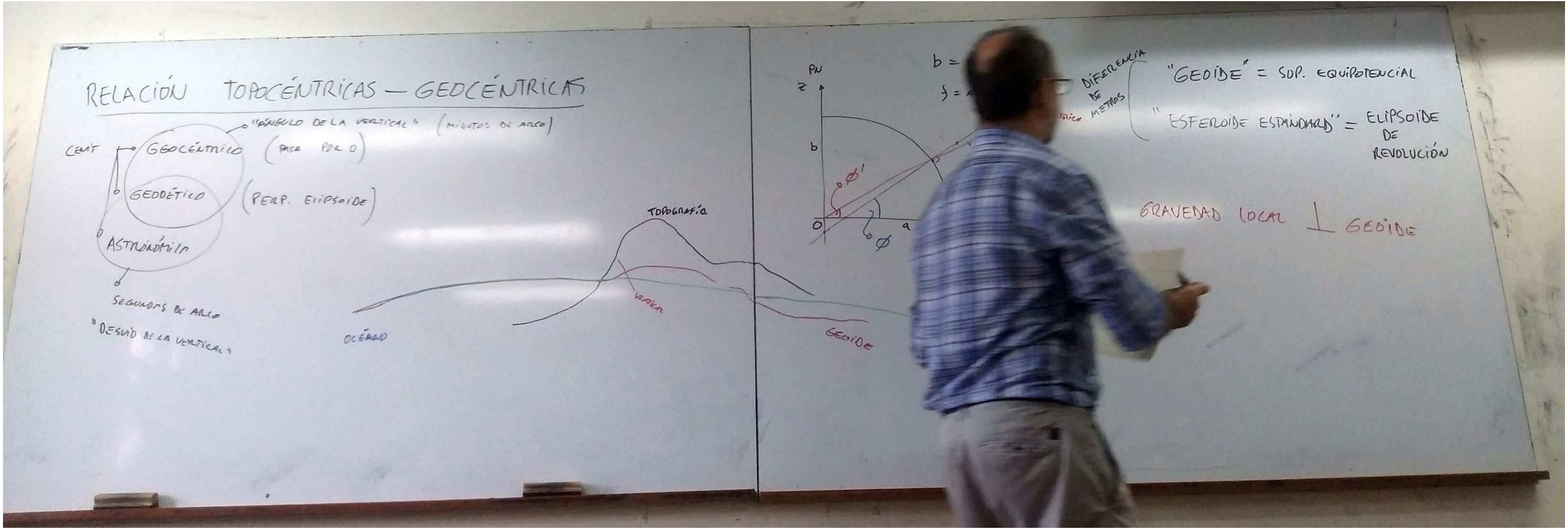
Astronomia Fundamental 2018 - clase 8



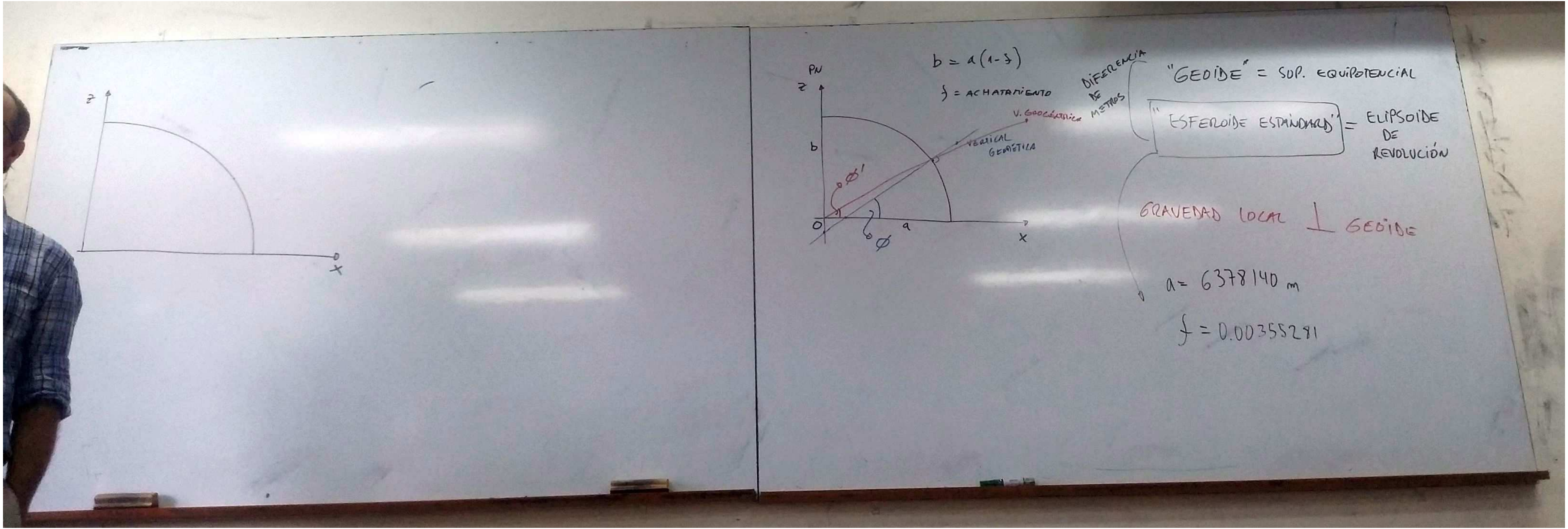
Astronomia Fundamental 2018 - clase 8



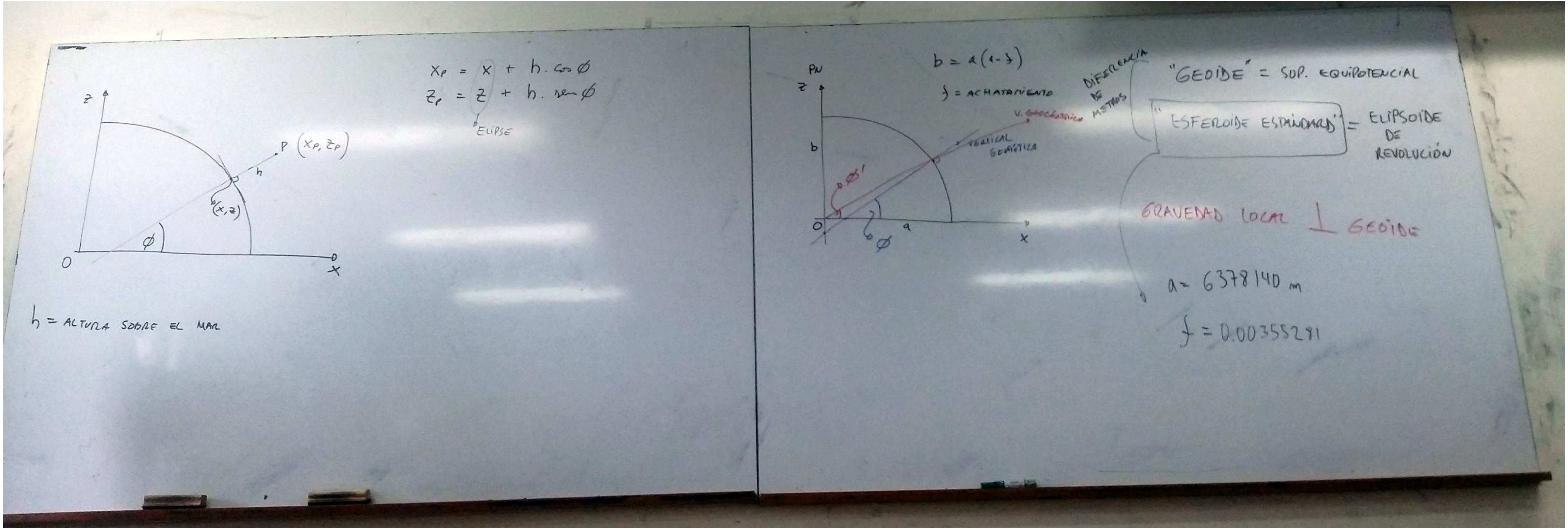

RELACIÓN TOPOCÉNTRICAS — GEOCÉNTRICAS
PARALAJE DIURNA
ABERRACIÓN DIURNA
TOPOGRAFÍA
OCÉANO
GEOIDE
ELIPSOIDE DE REVOLUCIÓN
b = a(1-f)
f = ACHATAMIENTO
PN
z
b
a
x
φ'
φ
V. GEOCÉNTRICA
DIFERENCIA DE METROS
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN
GRAVEDAD LOCAL ⊥ GEOIDE

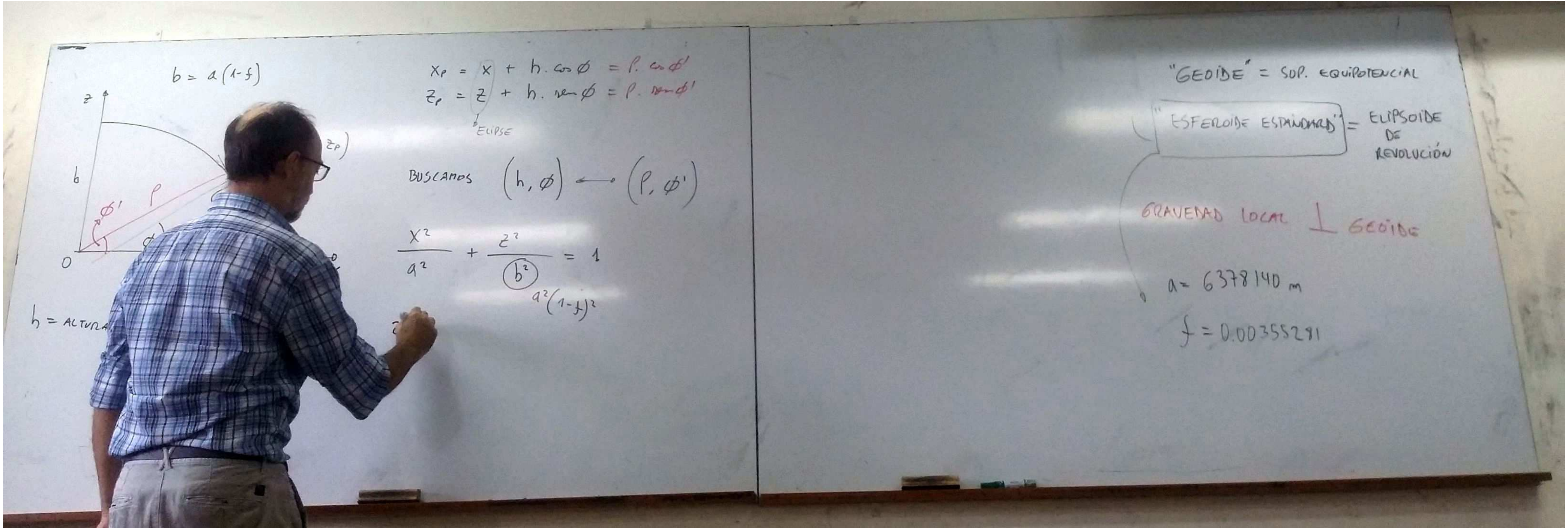

RELACIÓN TOPOCÉNTRICAS — GEOCÉNTRICAS
"ÁNGULO DE LA VERTICAL" (MINUTOS DE ARCO)
CENIT
GEOCÉNTRICO (PASA POR O)
GEODÉTICO (PERP. ELIPSOIDE)
ASTRONÓMICO
SEGUNDOS DE ARCO
"DESVÍO DE LA VERTICAL"
TOPOGRAFÍA
OCÉANO
GEOIDE
PN
z
b
a
O
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN
GRAVEDAD LOCAL ⊥ GEOIDE

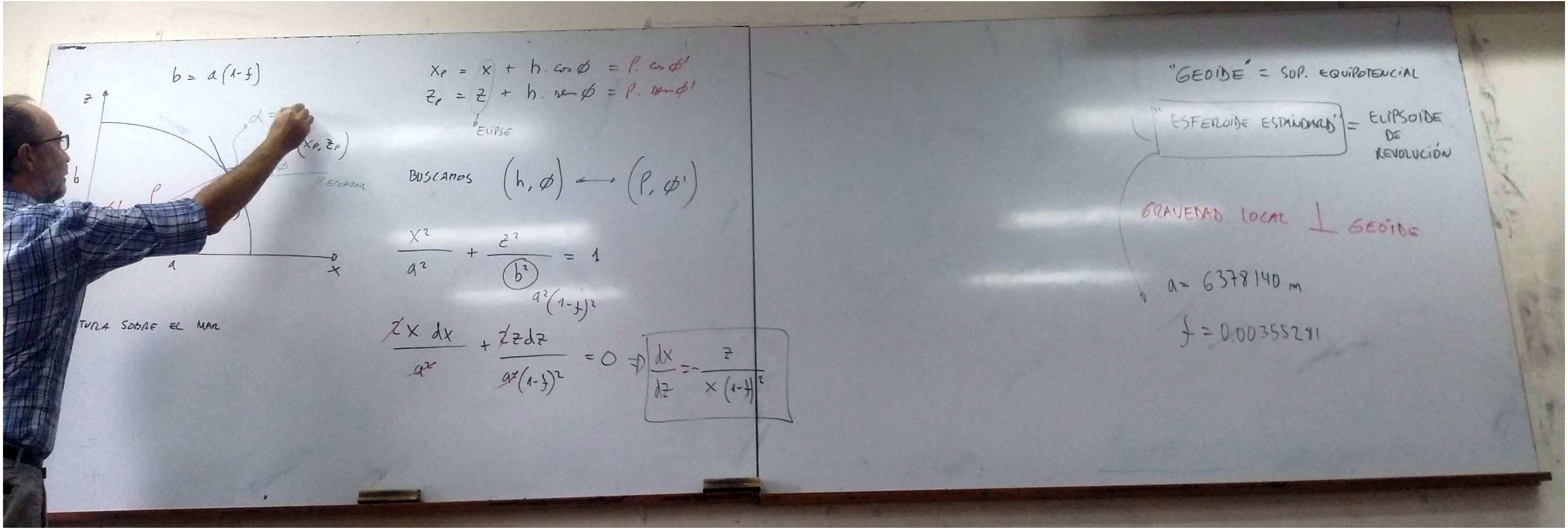
Astronomia Fundamental 2018 - clase 8



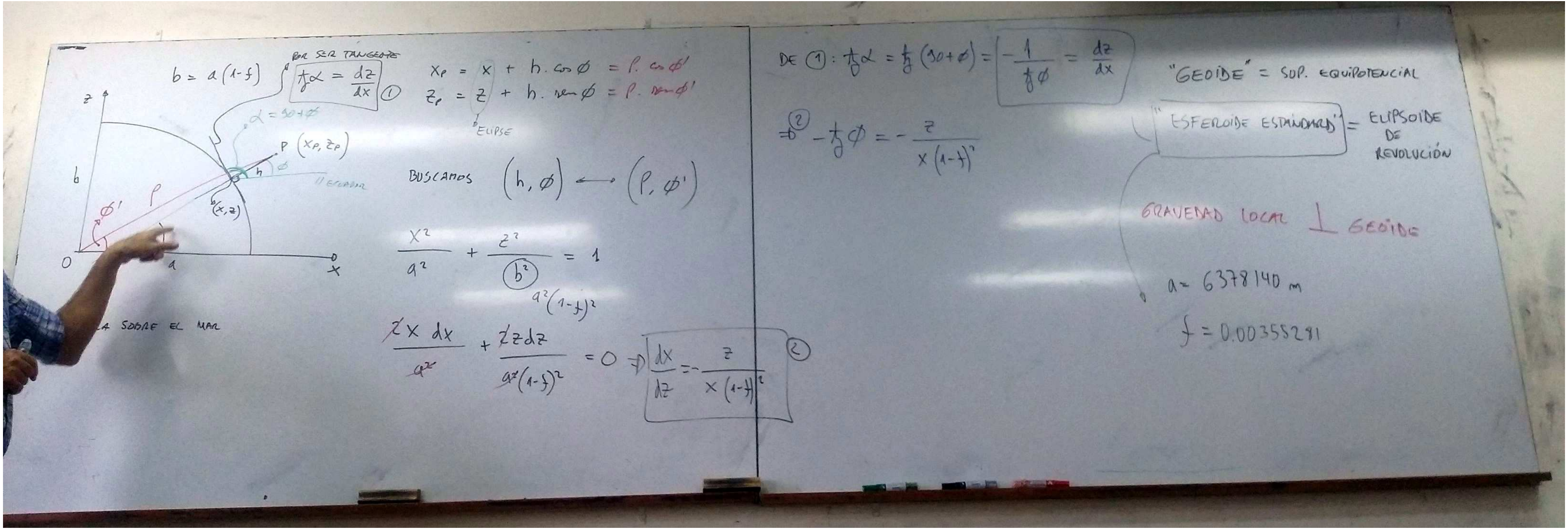
Astronomia Fundamental 2018 - clase 8



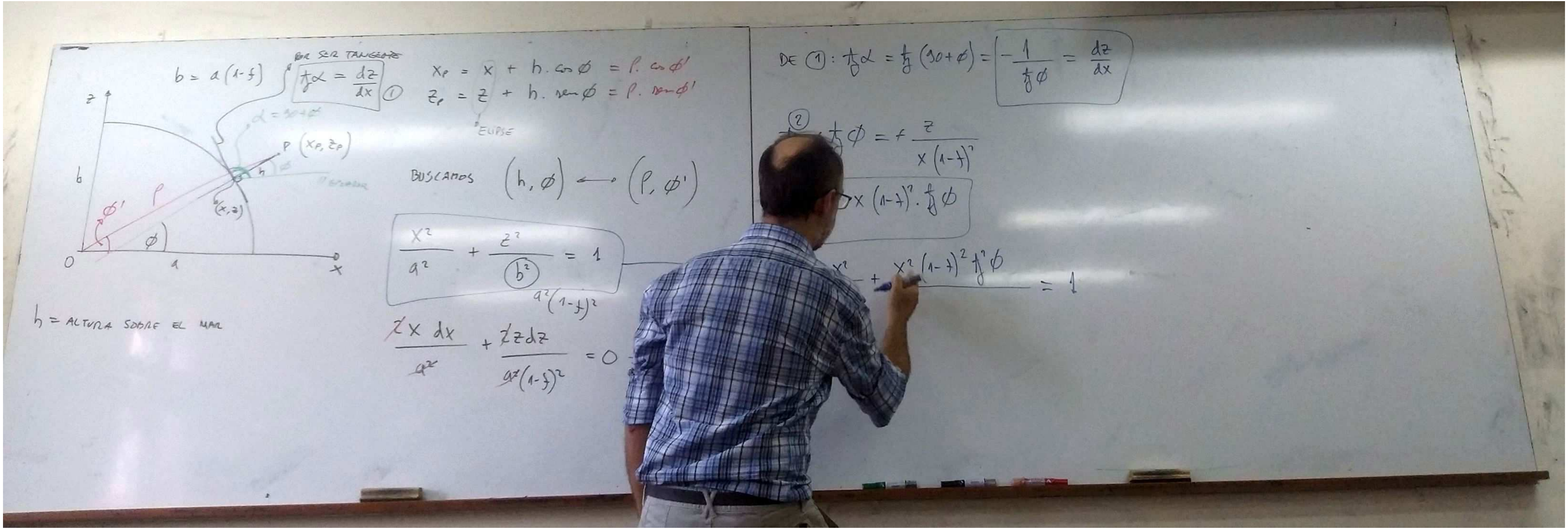

b = a(1-f)
$x_P = x + h . \cos\phi = \rho . \cos\phi'$
$z_P = z + h . \sin\phi = \rho . \sin\phi'$
ELIPSE
BUSCAMOS $(h, \phi) \longleftrightarrow (\rho, \phi')$
$\frac{x^2}{a^2} + \frac{z^2}{b^2} = 1$
$a^2(1-f)^2$
h = ALTURA
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN
GRAVEDAD LOCAL ⊥ GEOIDE
a = 6378140 m
f = 0.00335281


b = a(1-f)
z
x
a
b
TURA SOBRE EL MAR
x_P = x + h. cos φ = ρ. cos φ'
z_P = z + h. sen φ = ρ. sen φ'
ELIPSE
(x_P, z_P)
BUSCAMOS (h, φ) ⟷ (ρ, φ')
x²/a² + z²/b² = 1
a²(1-f)²
2x dx/a² + 2z dz/a²(1-f)² = 0 ⇒ dx/dz = -z/x(1-f)²
"GEOIDE" = SUP. EQUIPOTENCIAL
"ESFEROIDE ESTÁNDARD" = ELIPSOIDE DE REVOLUCIÓN
GRAVEDAD LOCAL ⊥ GEOIDE
a = 6378140 m
f = 0.00355281

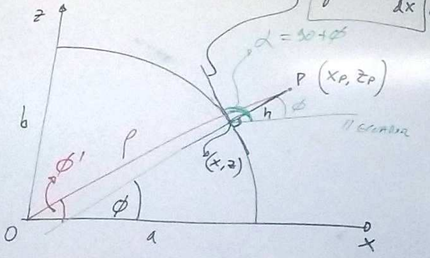
Astronomia Fundamental 2018 - clase 8



Astronomia Fundamental 2018 - clase 8



$b = a(1-f)$



POR SER TANGENTE: $\tan\alpha = \frac{dz}{dx}$ (1)

$x_P = x + h\cos\phi = \rho\cos\phi'$

$z_P = z + h\sin\phi = \rho\sin\phi'$

(x, z): ELIPSE

BUSCAMOS $(h, \phi) \longleftrightarrow (\rho, \phi')$

$$\frac{x^2}{a^2} + \frac{z^2}{b^2} = 1, \quad b^2 = a^2(1-f)^2$$

$$\frac{2x\,dx}{a^2} + \frac{2z\,dz}{a^2(1-f)^2} = 0 \Rightarrow \frac{dx}{dz} = -\frac{z}{x(1-f)^2} \quad (2)$$

h = ALTURA SOBRE EL MAR

DE (1): $\tan\alpha = \tan(90+\phi) = -\frac{1}{\tan\phi} = \frac{dz}{dx}$

(2) $\Rightarrow +\tan\phi = +\frac{z}{x(1-f)^2}$

$$z = x(1-f)^2\tan\phi \quad (3)$$

$$\rightarrow \frac{x^2}{a^2} + \frac{x^2(1-f)^2\tan^2\phi}{a^2} = 1$$

$$x^2\left(1 + (1-f)^2\tan^2\phi\right) = a^2$$

$$x^2 = \frac{a^2}{\cos^2\phi + (1-f)^2\sin^2\phi}\cdot\cos^2\phi$$

$$x = a\cdot\left[\cos^2\phi + (1-f)^2\sin^2\phi\right]^{-1/2}\cdot\cos\phi$$

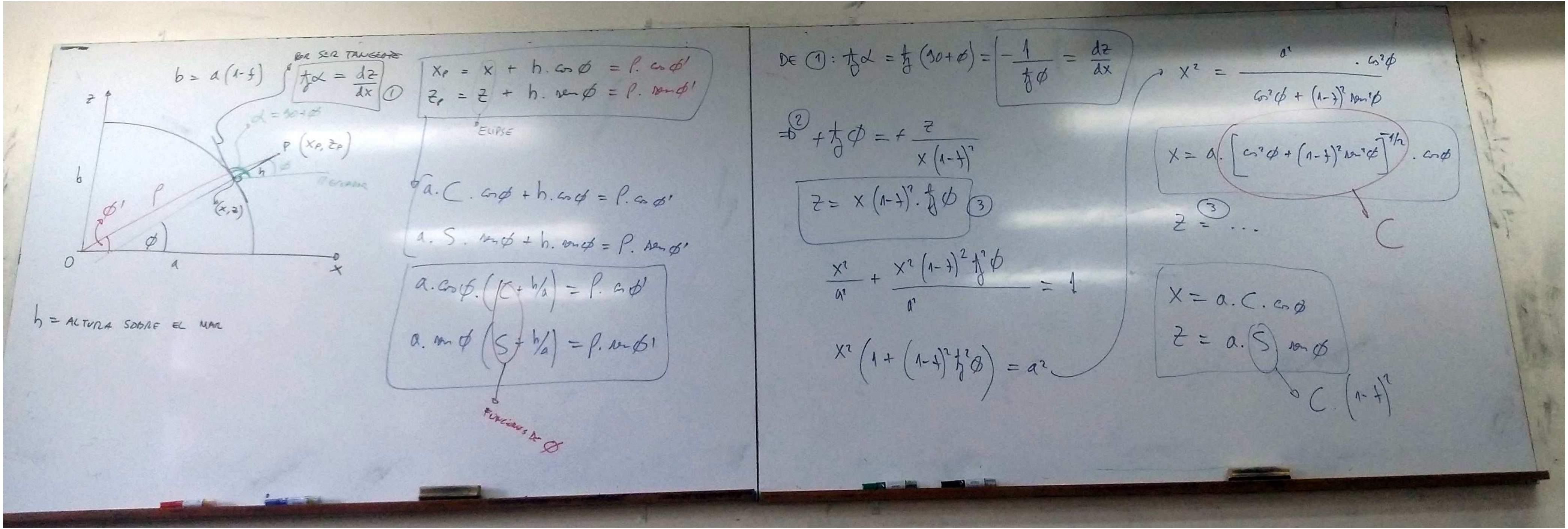
$\rightarrow C$

$z \overset{(3)}{=} \ldots$

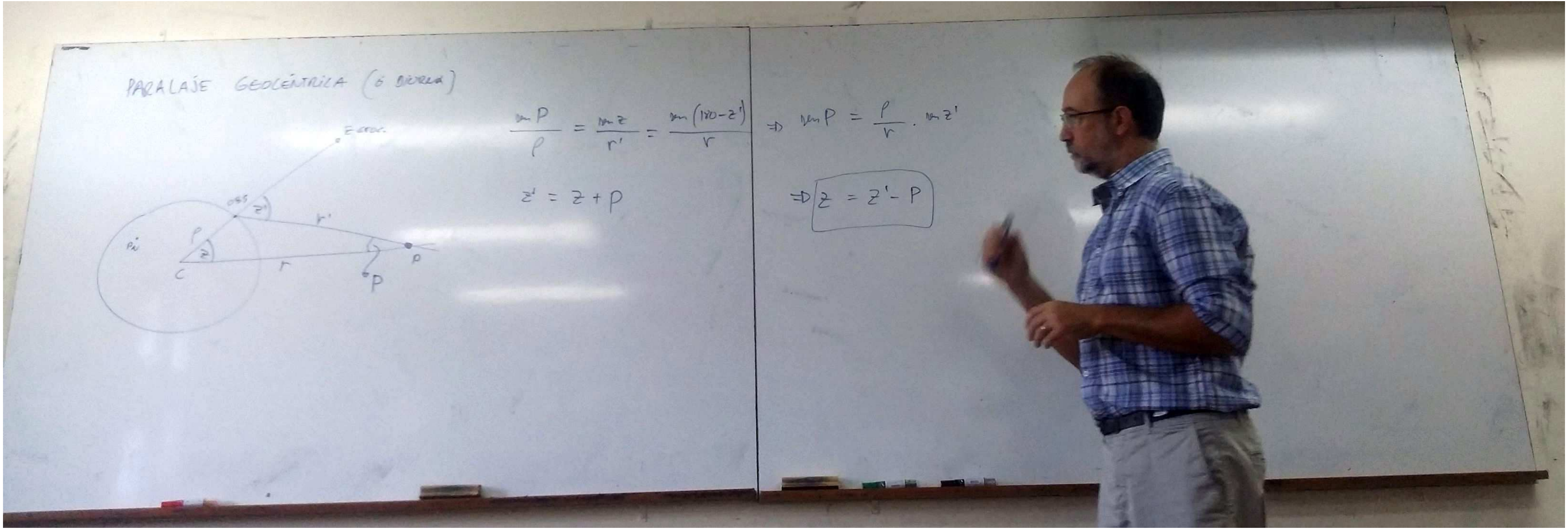
$x = a \cdot C \cdot \cos\phi$

$z =$

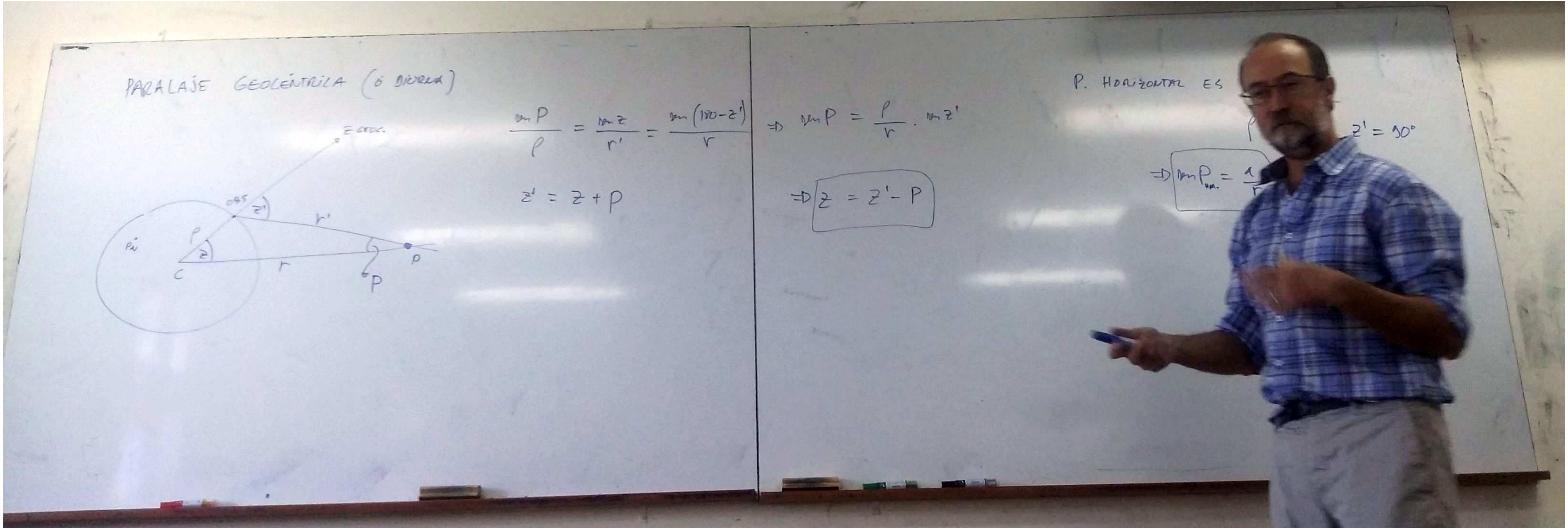
Astronomia Fundamental 2018 - clase 8



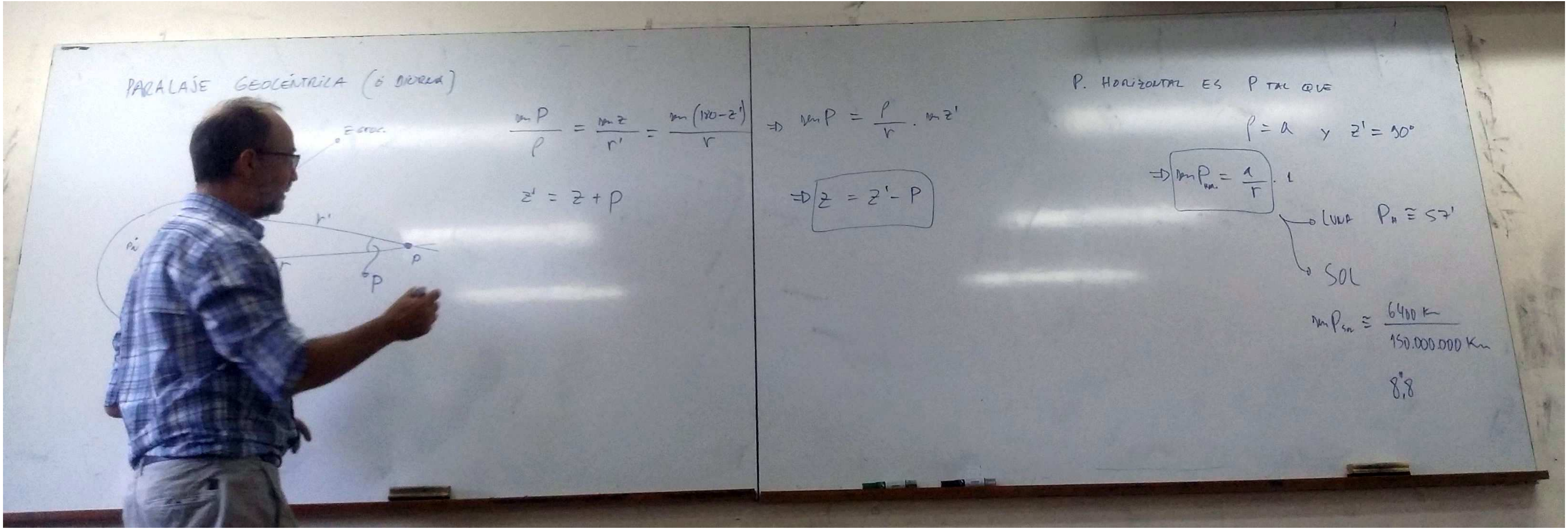

PARALAJE GEOCÉNTRICA (Ó DIURNA)
Z GEOC.
z'
z
C
P
p


PARALAJE GEOCÉNTRICA (ó DIURNA)
$\frac{\sin P}{\rho} = \frac{\sin z}{r'} = \frac{\sin(180 - z')}{r}$
$\Rightarrow \sin P = \frac{\rho}{r} \cdot \sin z'$
$z' = z + P$
$\Rightarrow z = z' - P$
OBS
C
r
r'
P

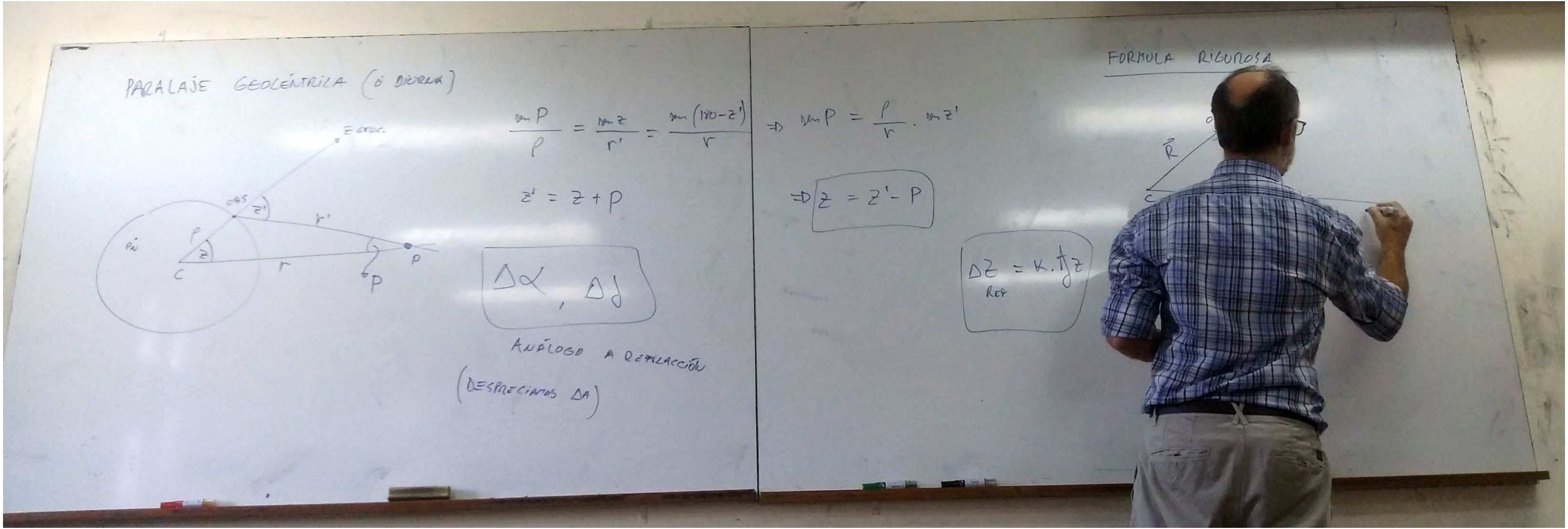
Astronomia Fundamental 2018 - clase 8

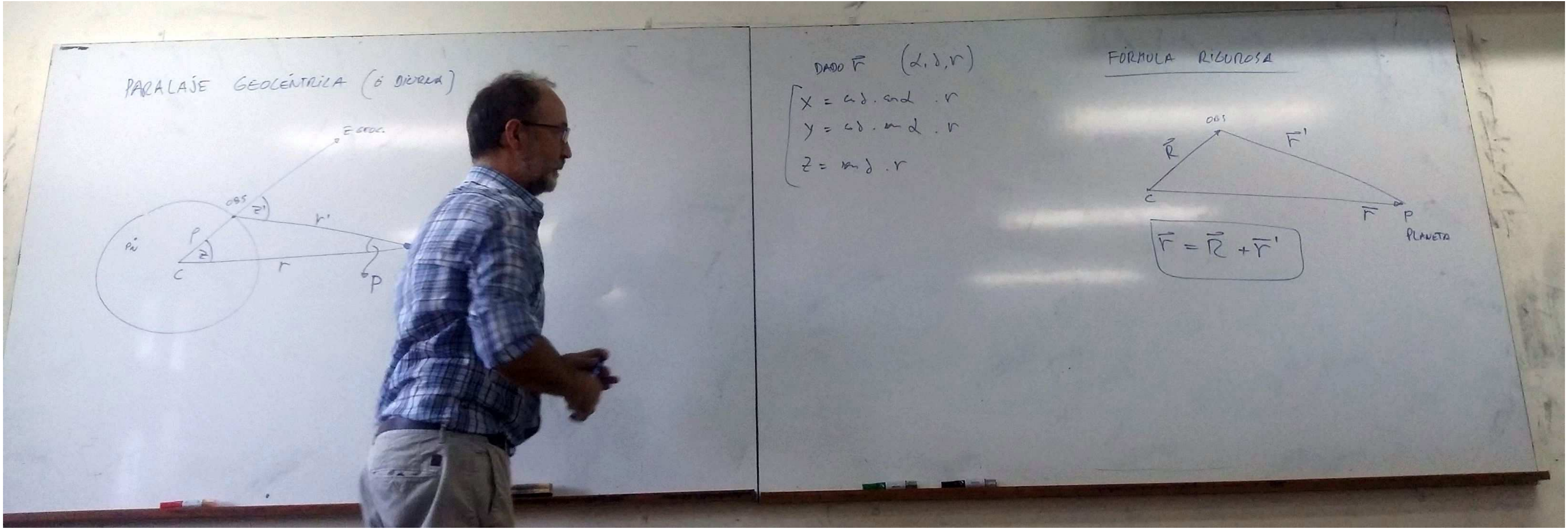


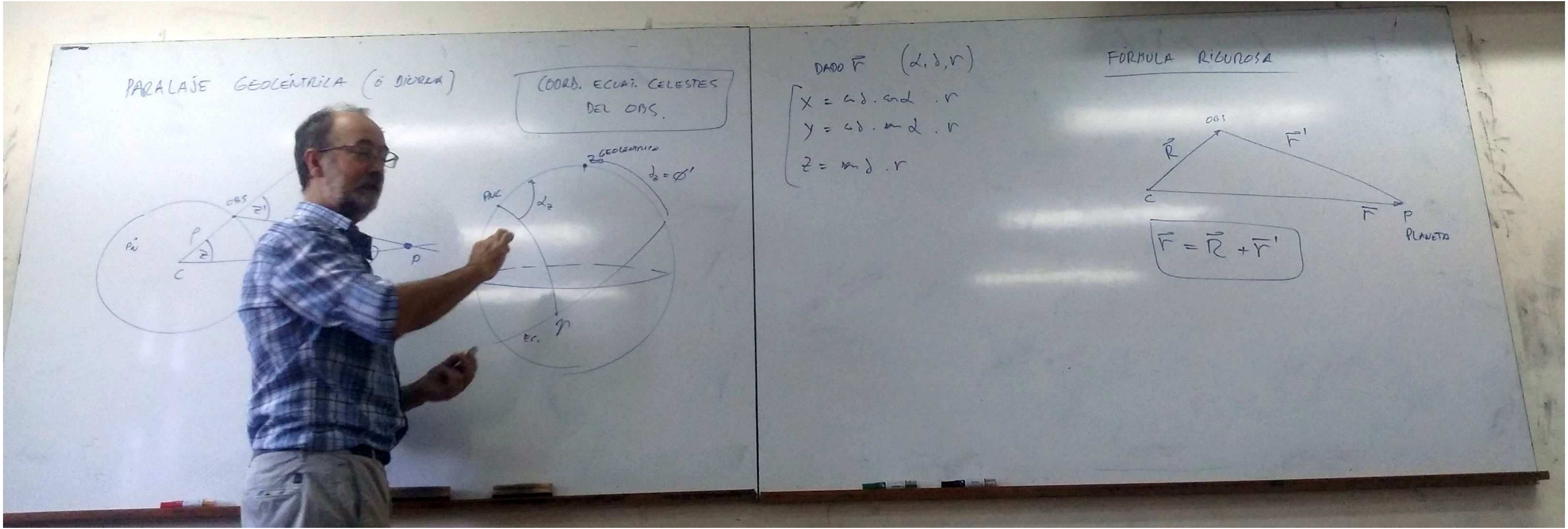
Astronomia Fundamental 2018 - clase 8

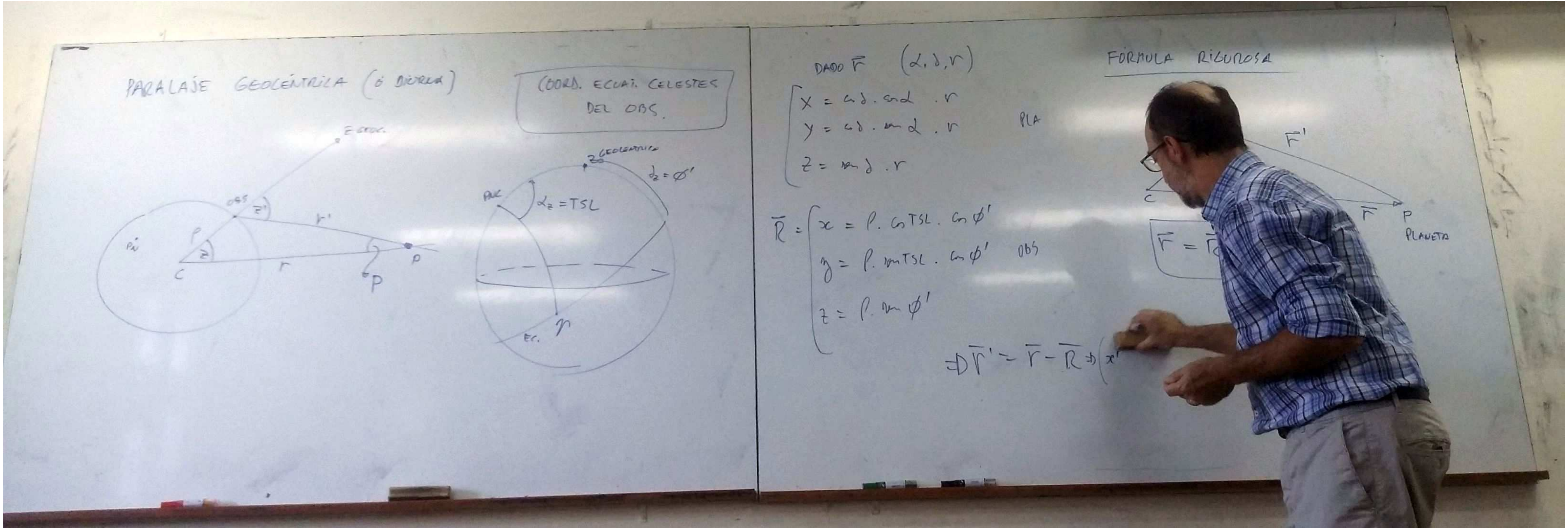


Astronomia Fundamental 2018 - clase 8




PARALAJE GEOCÉNTRICA (ó DIURNA)
OBS
z'
r'
z
C
r
P
DADO $\vec{r}$ (α, δ, r)
FÓRMULA RIGUROSA
OBS
$\vec{R}$
$\vec{r}\,'$
C
$\vec{r}$
P
PLANETA
$\vec{r} = \vec{R} + \vec{r}\,'$


PARALAJE GEOCÉNTRICA (Ó DIURNA)
COORD. ECUAT. CELESTES DEL OBS.
DADO r (α, δ, r)
x = cos δ . cos α . r
y = cos δ . sen α . r
z = sen δ . r
FÓRMULA RIGUROSA
OBS
C
P
PLANETA
r = R + r'


PARALAJE GEOCÉNTRICA (ó DIURNA)
COORD. ECUAT. CELESTES DEL OBS.
OBS
C
P
r
r'
α_z = TSL
$\delta_z = \phi'$
DADO $\vec{r}$ (α, δ, r)
PLA
OBS
FORMULA RIGUROSA
PLANETA

Astronomia Fundamental 2018 - clase 8