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## M1-SOAC TR3

## Chapter 3: Geophysical Waves



## Barème

Let's focus on planet Earth, whose radius is $R=6400 \mathrm{~km}$.

1) Compute the Coriolis parameter $f$ at $25^{\circ} \mathrm{N}$ and then at $25^{\circ} S$.
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$\qquad$
2) derive the formulation of the meridional variation of the Coriolis force $\beta$ (also called the Rossby parameter).
/2 4) Compute $\beta$ at the equator and at $45^{\circ} N$.
3) Plot $\beta$ in function of the latitude (from $-90^{\circ} S$ to $90^{\circ} \mathrm{N}$ ).
4) Which formula would you use if you had to compute the distance between Paris ([48 ${ }^{\circ} \mathrm{N}$; $\left.2^{\circ} \mathrm{E}\right]$ ) and Rio de Janero ( $\left[23^{\circ} \mathrm{S} ; 43^{\circ} \mathrm{W}\right]$ ?)
