Diagrammes de Bode de quelques filtres

Fonctions de transfert de quelques filtres classiques

⋆ Passe-bas d'ordre 1 :

$$\boxed{\underline{H}(x) = \frac{H_0}{1+jx}} \quad ; \quad G(x) = \frac{H_0}{\sqrt{1+x^2}} \quad ; \quad \varphi = -\arctan(x)$$

⋆ Passe-haut d'ordre 1 :

$$\boxed{\underline{H}(x) = \frac{H_0}{1+\dfrac{1}{jx}}} \quad ; \quad G(x) = \frac{H_0}{\sqrt{1+\dfrac{1}{x^2}}} \quad ; \quad \varphi = \arctan\left(\frac{1}{x}\right)$$

⋆ Passe-bas d'ordre 2 :

$$\boxed{\underline{H}(x) = \frac{H_0}{(1-x^2)+\dfrac{jx}{Q}}} \quad ; \quad G(x) = \frac{H_0}{\sqrt{(1-x^2)^2+\dfrac{x^2}{Q^2}}} \quad ; \quad \varphi = \arctan\left[\frac{Q(1-x^2)}{x}\right] - \frac{\pi}{2}$$

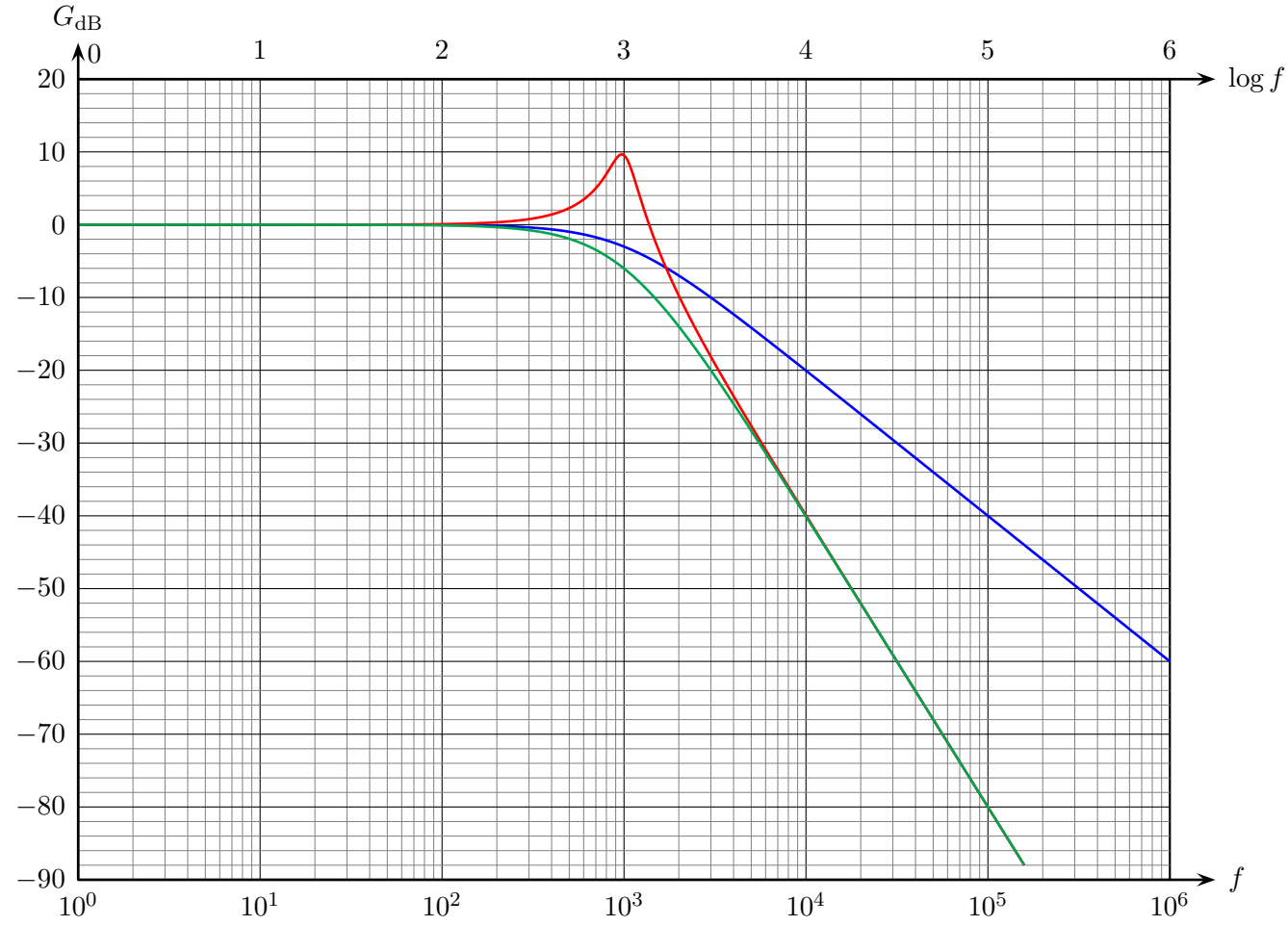
⋆ Passe-haut d'ordre 2 :

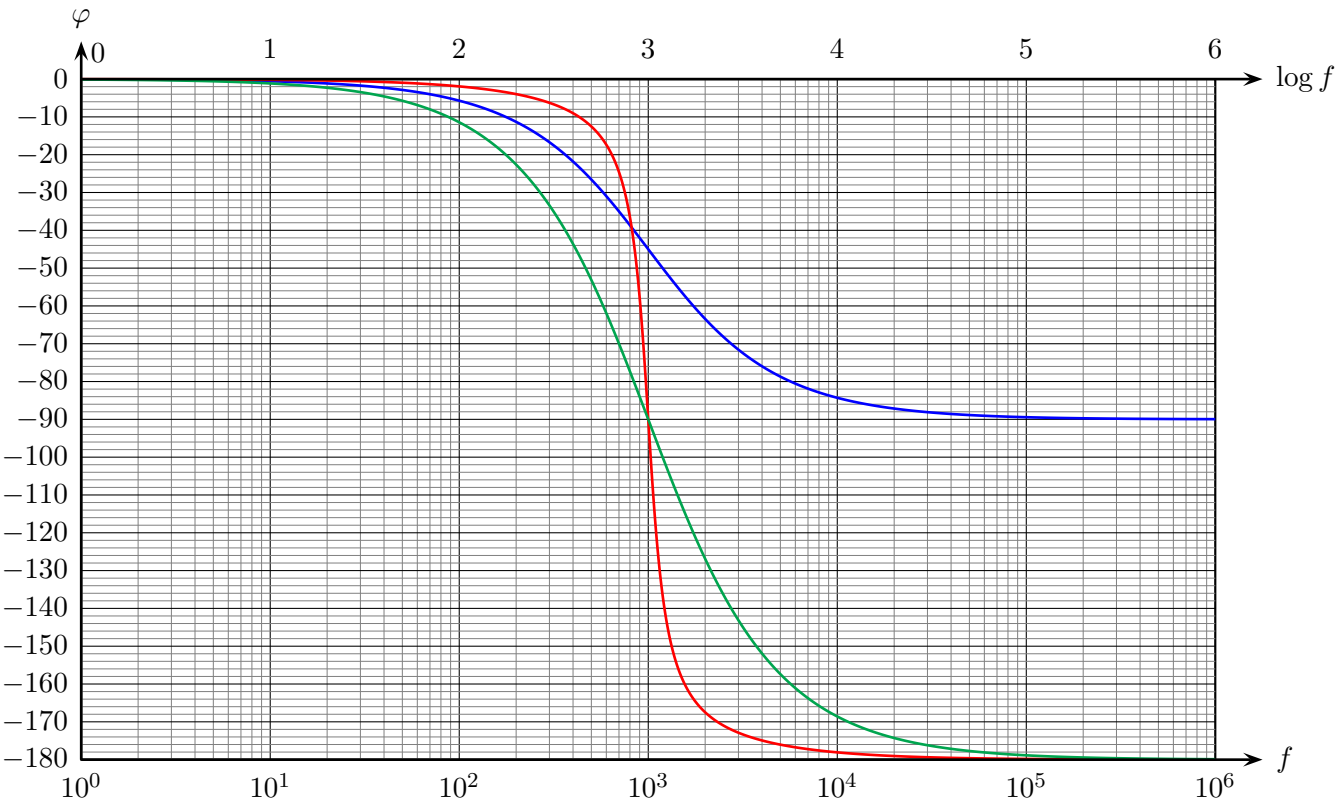
$$\boxed{\underline{H}(x) = \frac{H_0}{\left(1-\dfrac{1}{x^2}\right)+\dfrac{1}{jxQ}}} \quad ; \quad G(x) = \frac{H_0}{\sqrt{\left(1-\dfrac{1}{x^2}\right)^2+\dfrac{1}{x^2Q^2}}} \quad ; \quad \varphi = \frac{\pi}{2} - \arctan\left[xQ\left(1-\frac{1}{x^2}\right)\right]$$

⋆ Passe-bande d'ordre 2 :

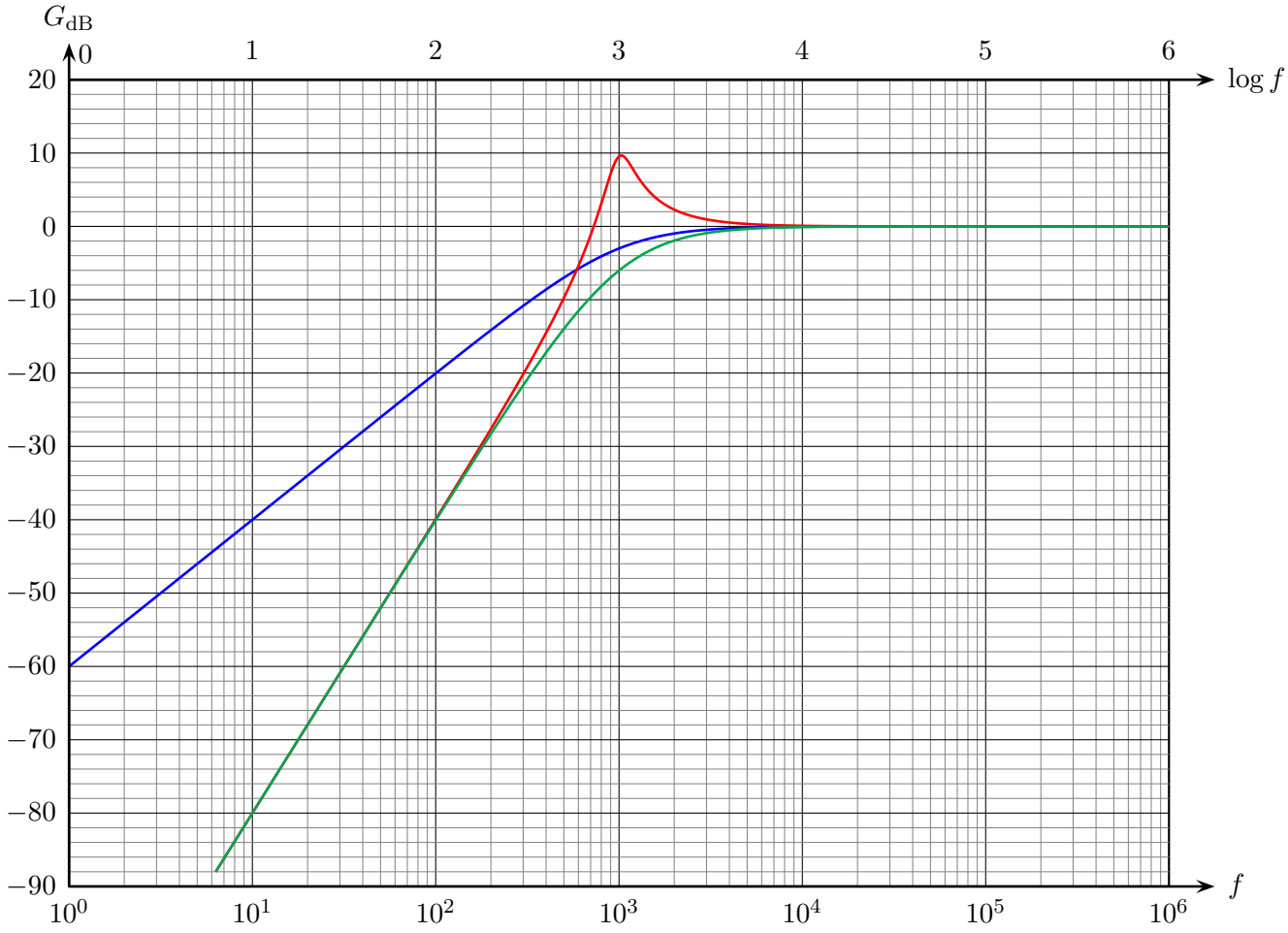
$$\boxed{\underline{H}(x) = \frac{H_0}{1+jQ\left(x-\dfrac{1}{x}\right)}} \quad ; \quad G(x) = \frac{H_0}{\sqrt{1+Q^2\left(x-\dfrac{1}{x}\right)^2}} \quad ; \quad \varphi = -\arctan\left[Q\left(x-\frac{1}{x}\right)\right]$$

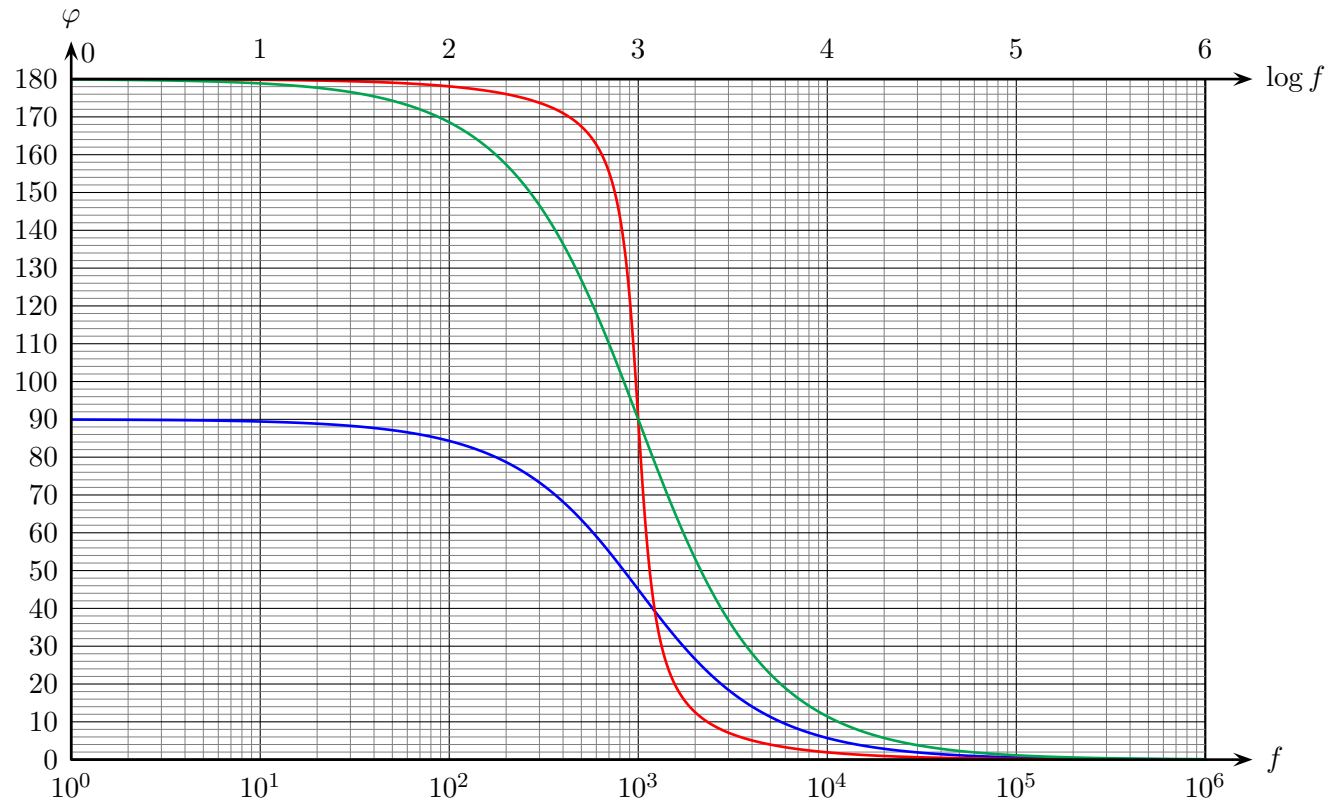
Filtres passe-bas d'ordre 1 et 2





Filtres passe-haut d'ordre 1 et 2





Passe-bande d'ordre 2