

TD6 : Asservissement

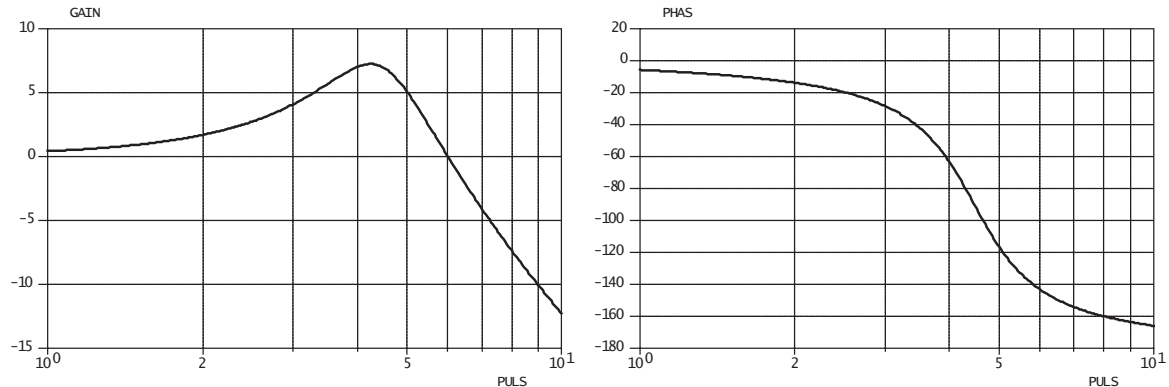
1 Tracé de diagrammes de Bode

Tracer, sur les quatre diagrammes logarithmiques du document réponse, les diagrammes de Bode asymptotiques puis l'allure des diagrammes de Bode des fonctions de transfert suivantes :

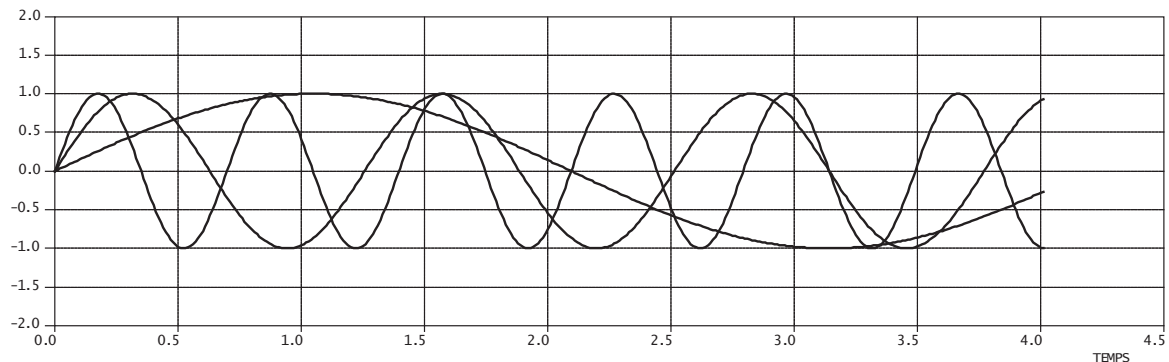
1. Les fonctions $F_1(p) = \frac{1}{1+p}$, $F_2(p) = \frac{10}{1+p}$ et $F_3(p) = \frac{1}{1+10p}$.
2. Les fonctions $F_1(p) = 3$, $F_2(p) = 3p$ et $F_3(p) = 3/p$.
3. Les fonctions $F_1(p) = 3 + 3p$, $F_2(p) = 3 + 0.3/p$ et $F_3(p) = 3 + 3p + 0.3/p$.
4. Les fonctions $F_1(p) = \frac{1}{1+p+p^2}$, $F_2(p) = \frac{1}{1+0.1p+p^2}$ et $F_3(p) = \frac{1}{1+p+0.1p^2}$.

2 Réponse temporelle harmonique d'un système

Soit un système dont le diagramme de Bode est donné ci-dessous :

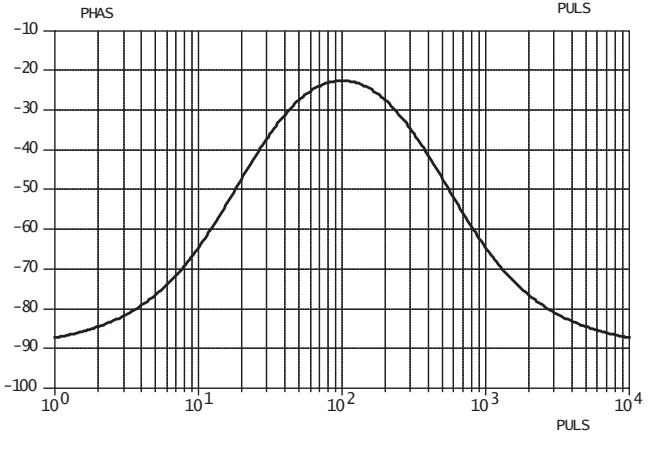
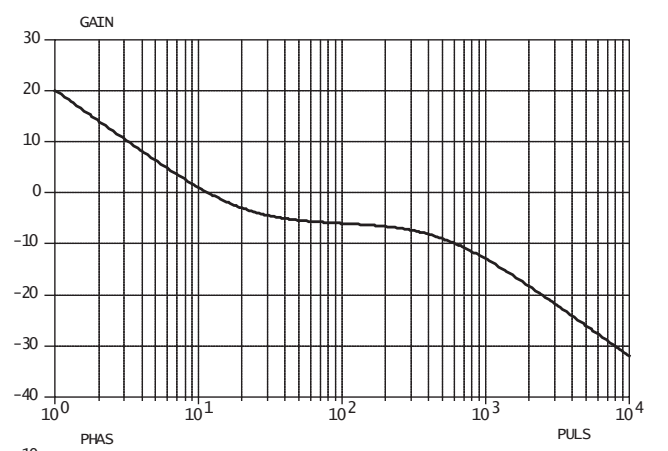
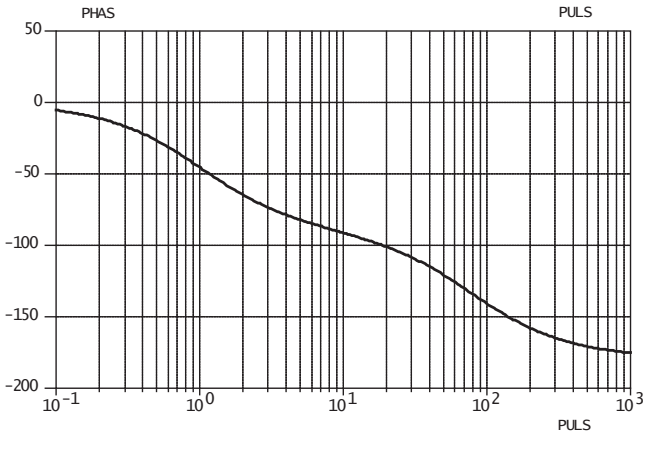
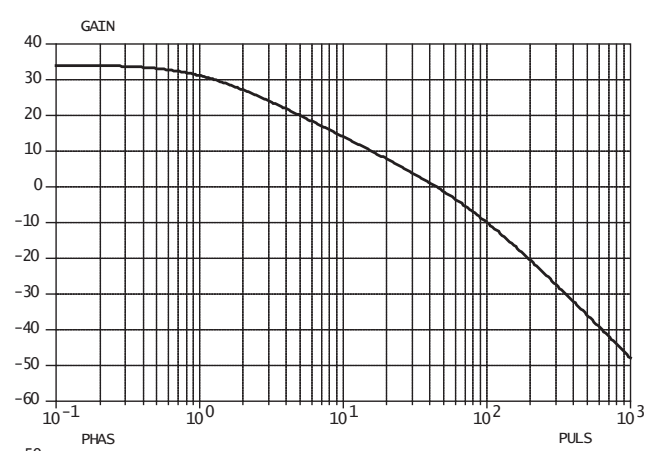
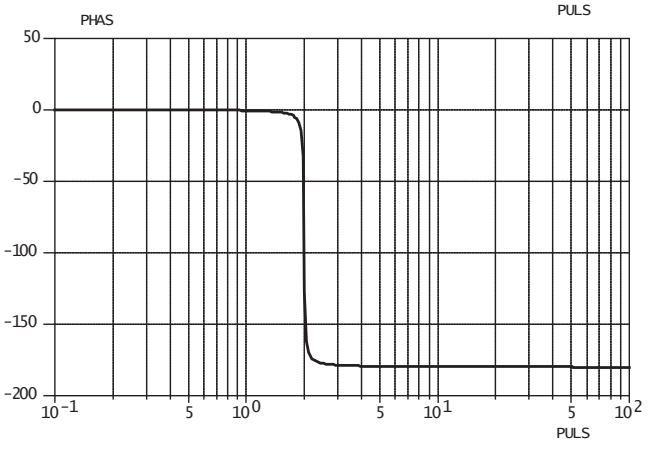
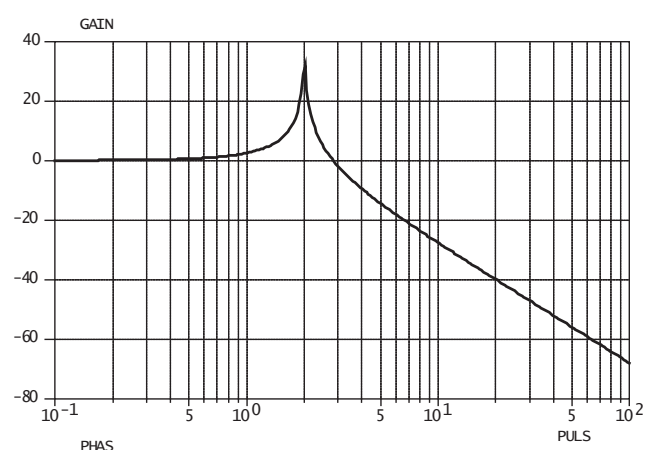
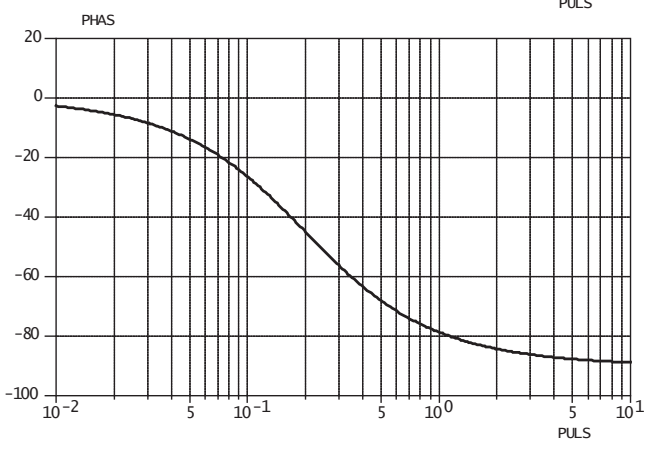
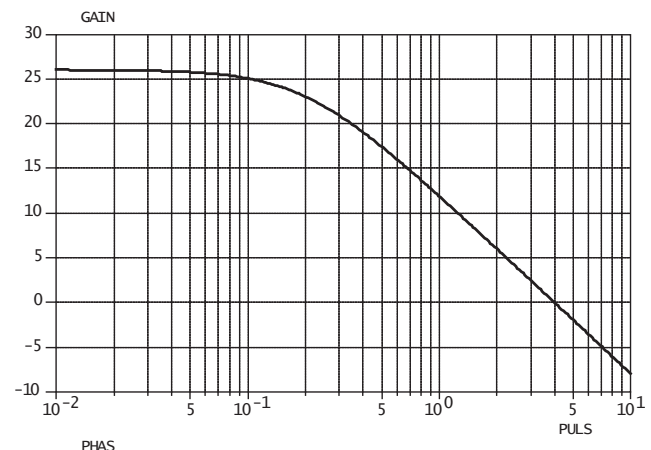


1. Tracer le diagramme de Bode asymptotique.
2. Identifier le type de la fonction de transfert et les valeurs remarquables.
3. Le diagramme temporel ci-dessous présente 3 signaux d'entrée sinusoïdaux. Déterminer les périodes et les pulsations de chacun des signaux.
4. Tracer les 3 sorties correspondant aux 3 entrées précédentes en rouge, bleu et vert.



3 Identification de fonction de transfert sur diagramme de Bode

Pour les quatre diagrammes de Bode suivants, tracer les diagrammes de Bode asymptotiques puis identifier les fonctions de transfert (pour le second ordre faiblement amorti, on ne cherchera pas la valeur précise de ε mais seulement une estimation).



A large grid of graph paper. The grid is composed of 10 major columns and 10 major rows. Each major cell is further divided into a 2x2 sub-grid of smaller cells, resulting in a total of 400 small cells. The grid is empty and occupies the top half of the page.

A second large grid of graph paper, identical to the one above. It consists of 10 major columns and 10 major rows, with each major cell divided into a 2x2 sub-grid of smaller cells, totaling 400 small cells. The grid is empty and occupies the bottom half of the page.

A large grid of graph paper with a 20x20 grid pattern. The grid is composed of small squares, with a larger square grid overlaid on top. The larger grid has 4 columns and 4 rows, with each cell being 5x5 small squares. The grid is empty and ready for use.

A second large grid of graph paper with a 20x20 grid pattern, identical to the one above. It is also empty and ready for use.