Projet PTS

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0 - 0,064	0 - 0,44	0,32 - 3,008	2,88 - 4,032	3,504 + 4,1945
30	350	2500	1200	400

3.2.1 analyze

$$P(\bar{x}) =$$

$$\bar{x} = \frac{2x}{\pi} \quad \Rightarrow \quad x = \frac{\pi}{2}\bar{x} \qquad P(x) = \sin\left(\right.$$

$$P(\bar{x}) = a\bar{x} + b\bar{x}^3 + c\bar{x}^5$$

$$P(\bar{x}=1) = \underset{x=\frac{\pi}{2}}{} \quad a + b + c \quad = \quad P\left(x = \frac{\pi}{2} \cdot 1\right) = \sin\left(\frac{\pi}{2}\right) = 1$$

$$a + b + c = 1 \quad \textcircled{1}$$

$$P'(\bar{x}) = a + 3b\bar{x} + 5c\bar{x}^{-4}$$

$$P'(\bar{x}=2) = a + 3b + 5c = \frac{\pi}{2}\cos\left(\frac{\pi}{2}\bar{x}\right)\bigg|_{\bar{x}=1} = 0$$

$$a + 3b + 5c = 0$$

$$\begin{cases} a+b+c = 2 \\ a+3b+5c=0 \end{cases} \Rightarrow \begin{cases} b = 1-a-c \\ a+3(1-a-c)+5c=0 \end{cases}$$

$$\begin{cases} b = 1-a-c \\ a+3-3a-3c+5c=0 \end{cases}$$

$$\begin{cases} b = 1-a-c \\ 2c = 2a-3 \end{cases} \Rightarrow \begin{cases} b = 1-a-\left(a-\frac{3}{2}\right) \\ c = a-\frac{3}{2} \end{cases}$$

$$\begin{cases} b = -2a+5/2 \\ c = a-\frac{3}{2} \end{cases}$$

c-) $P'(\bar{x}=0) = \left(a + 3b\,\bar{x}^2 + 5c\,\bar{x}^4\right)_{\bar{x}=0} = \left(\frac{\pi}{2}\cos\left(\frac{\pi}{2}\bar{x}\right)\right) = 0$

$$\Rightarrow \boxed{a = \frac{\pi}{2}}$$

$$\int_0^2 P(\bar{x})\,d\bar{x} = \int_0^1 \sin\left(\frac{\pi}{2}\bar{x}\right)d\bar{x}$$

$$= \left[-\frac{\cos\left(\frac{\pi}{2}\bar{x}\right)}{\frac{\pi}{2}} \right]_0^2$$

$$= \frac{\left(-\cos\left(\frac{\pi}{2}\times 2\right) + \cos(0)\right)}{\pi/2}$$

$$\int_0^1 P(\bar{x})\,d\bar{x} = \frac{2}{\pi}$$

$$\int_0^1 p(\bar{x})\, d\bar{x} = \int_0^1 a\bar{x} + b\bar{x}^3 + c\bar{x}^5 \, dx$$

$$= \left[\frac{a}{2}\bar{x}^2 + \frac{b}{4}x^4 + \frac{c}{6}\bar{x}^6 \right]_0^1$$

$$= \frac{a}{2} + \frac{b}{4} + \frac{c}{6} = \frac{2}{\pi}$$

$$a = \frac{4}{\pi} - \frac{b}{2} - \frac{c}{3}$$

$$a = \frac{4}{\pi} - \left(-a + \frac{5}{4} \right) - \left(\frac{a}{3} - \frac{1}{2} \right)$$

$$a = \frac{4}{\pi} + a - \frac{5}{4} - \frac{a}{3} + \frac{1}{2}$$

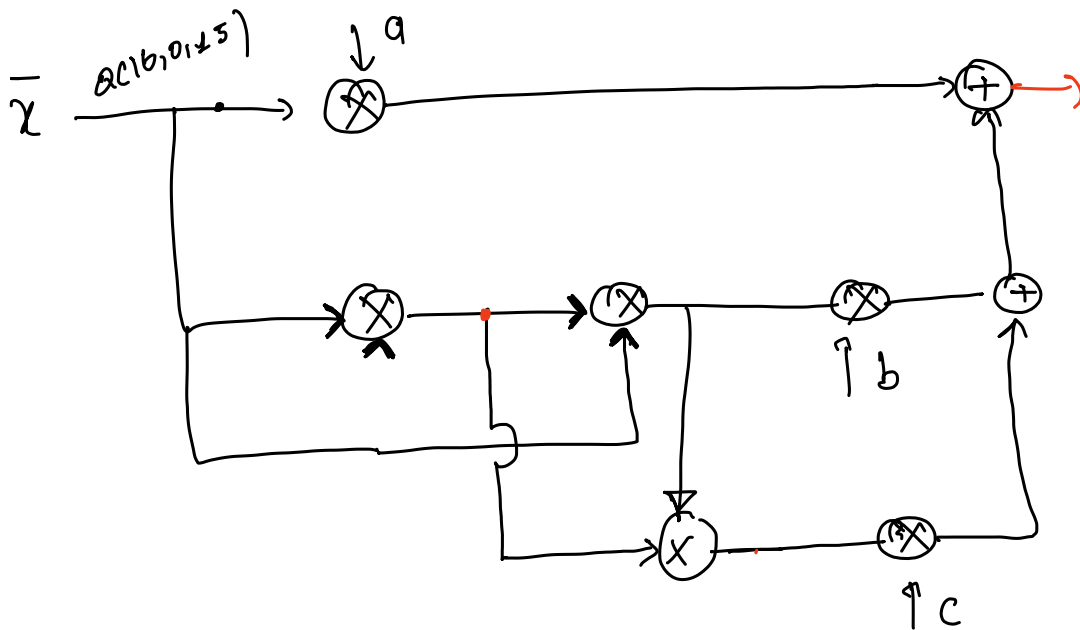$$(=) \quad \frac{a}{3} = \frac{4}{\pi} - \frac{5}{4} + \frac{1}{2}$$

$$(=) \quad a = \frac{12}{\pi} - \frac{15}{4} + \frac{3}{2}$$

$$= \frac{12}{\pi} - \frac{15 + 6}{4}$$

$$\boxed{a = \frac{12}{\pi} - \frac{9}{4}}$$

$$P(\bar{x}) = a\bar{x} + b\bar{x}^3 + c\bar{x}^5 \implies$$

dynamique de sortie de $P(\bar{x})$:

$$-1 \leq \bar{x} \leq 1 \implies \begin{array}{l} -1 \leq \bar{x}^3 \leq 1 \\ -1 \leq \bar{x}^5 \leq 1 \end{array}$$

$$\left. \begin{array}{l} a \cdot \bar{x} \in [-1,56, 1,56] \\ b\bar{x}^3 \in [-0,63, 0,63] \\ c\bar{x}^5 \in [-0,09, 0,09] \end{array} \right\} \implies P(\bar{x}) \in [-2,95, 2,95]$$

$$\bar{x} \implies Q(16, 0, 15)$$

$$a = 1,56 \implies Q_a(16, 1, 14)$$

$$b = -0,63 \implies Q_b(16, 0, 15)$$

$$c = \textcolor{red}{90} \ b \implies Q_c(16, \textcolor{red}{-4}, 19)$$

$$\bar{x} \cdot a \quad \Rightarrow \quad Q_{\bar{x} \cdot a}(32, 2, 29) \Rightarrow Q_{\bar{x} \cdot a}(16, 2, 13)$$

$$\bar{x}^3 \cdot b \Rightarrow Q_{\bar{x}^3 \cdot a}(32, 1, 30) \Rightarrow Q_{\bar{x} \cdot b}(16, 1, 14)$$

$$\bar{x}^5 \cdot c \Rightarrow Q_{\bar{x}^3 \cdot c}(32, 1, 30) \Rightarrow Q_{\bar{x}^5_c}(16, 1, 14)$$

$Q(16,0,15)$ a $Q(16,1,14)$ $@(16,1,14)$ $y : @(16,0,15)$

$\gg 1$

$Q(16,2,13)$

$@(16,2,14)$ $@(16,0,15)$ $Q(16,1,14) \gg 1$ $Q(16,0,15)$ $@(16,1,14)$ $Q(16,1,14)$

$\gg 1$

$Q(16,0,15)$ b

$@(16,0,15)$

$Q(16,1,14)$ c $Q(16,1,14)$

$\gg 2$

$@(16,-1,16)$

$Q(16,-3,18)$