<< Notation`

Symbolize  $\begin{bmatrix} x_{t+\Delta t} \end{bmatrix}$ 

 $Symbolize \left[ \begin{array}{c} \dot{\mathbf{x}}_{t+\Delta t} \end{array} \right]$ 

 $Symbolize \left[\begin{array}{c} \ddot{\mathbf{x}}_{\mathsf{t}+\Delta\mathsf{t}} \end{array}\right]$ 

Symbolize  $\begin{bmatrix} \mathbf{x}_{t+\gamma\Delta t} \end{bmatrix}$ 

Symbolize  $\begin{bmatrix} \dot{\mathbf{x}}_{t+\gamma\Delta t} \end{bmatrix}$ 

Symbolize  $\begin{bmatrix} \mathbf{x}_{t+\gamma\Delta t} \end{bmatrix}$ 

Symbolize xt

Symbolize [ x<sub>t</sub> ]

Symbolize xt

 ${\tt Symbolize} \big[ \begin{array}{c} r_{t+\Delta t} \end{array} \big]$ 

 $Symbolize \begin{bmatrix} r_{t+\gamma\Delta t} \end{bmatrix}$ 

Symbolize  $\left[\begin{array}{c} \Omega_{o} \end{array}\right]$ 

Symbolize  $\left[\frac{\overline{\Omega}_d}{\Omega_d}\right]$ 

Symbolize  $\left[\frac{\overline{\xi}}{\xi}\right]$ 

Symbolize  $\begin{bmatrix} \beta_1 \end{bmatrix}$ 

Symbolize  $\left[\begin{array}{c} \beta_2 \end{array}\right]$ 

Symbolize Xt

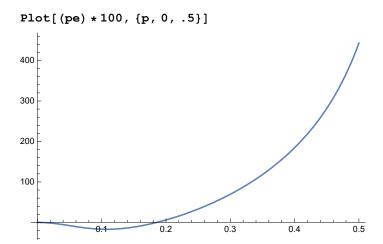
ClearAll["Global`\*"]

$$\alpha = \frac{-\delta \, \left(6 \, \delta \, \gamma^2 - 12 \, \delta \, \gamma - 3 \, \gamma + 4\right)}{6 \, \gamma \, \left(2 \, \delta \, \gamma - 1\right)} \, ;$$

$$\beta = \delta \left(\Omega^2 \alpha \gamma^2 + 1\right)^2;$$

$$\begin{split} \mathbf{A}_1 &= \frac{1}{\beta} \left( \left( \left( \frac{1}{4} \right) \, \delta^3 + \left( -\alpha \, \gamma + \left( \frac{1}{8} \right) \right) \, \delta^2 + \alpha \, \left( \alpha \, \gamma^2 - \left( \frac{\gamma}{2} \right) - \left( \frac{1}{4} \right) \right) \, \delta + \left( \frac{\alpha}{8} \right) \right) \, \gamma^2 \, \Omega^4 + \\ & \left( \frac{1}{8} \right) \, \left( 16 \, \alpha \, \gamma^2 - 4 \right) \, \delta \, \Omega^2 + \delta \right); \end{split}$$

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A_{2} = \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( 4 \alpha^{2} \gamma^{4} - 4 \alpha \gamma^{3} + 10 \alpha \gamma^{2} - \gamma + 1 \right) \delta + \gamma \alpha \left( \gamma - 2 \right) \right) \Omega^{4} + \frac{1}{\beta} \left( \left( 2 \delta^{3} \gamma^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \right) \delta^{2} + \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} \right) \Omega^{4} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} - 4 \gamma \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta^{2} + \frac{1}{\beta} \left( -8 \alpha \gamma^{3} + 3 \gamma^{2} + 3 \gamma^{2} \right) \delta
                                      2 \Omega^2 \alpha \gamma^2 \delta + \delta;
  \delta = 0.3;
 \gamma = 2.78;
 \Omega = 2 Pip;
\lambda 1 = A_1 + (A_1^2 - A_2)^{1/2};
  spR = LogLinearPlot[Abs[\lambda 1], \{p, 10^{-3}, 10^{4}\}]
  60
  50
  40
  30
  20
   10
        0.001
pe = \frac{\Omega}{\sigma \sigma} - 1
-1 + (2 p \pi) / ArcTan [(0.3 (1 + 3.58889 p^2)^2)]
                                            \sqrt{\left(-\left(\left(11.1111\ \left(0.3-3.76843\ p^2+133.228\ p^4\right)^2\right)\Big/\left(1+3.58889\ p^2\right)^4\right)} +
                                                                    (3.33333 (0.3 + 2.15333 p^2 + 1234.55 p^4)) / (1 + 3.58889 p^2)^2))
                                 (0.3 - 3.76843 p^2 + 133.228 p^4)
 -1+\frac{2p\pi}{qq}
         (2 p \pi) / ArcTan[(0.3 (1 + 3.58889 p^2)^2 \sqrt{(11.1111 (0.3 - 3.76843 p^2 + 133.228 p^4)^2)}/
                                                                           \left(1+3.58889~p^2\right)^4-\left(3.33333~\left(0.3+2.15333~p^2+1234.55~p^4\right)\right)
                                                                          (1+3.58889 p^2)^2))/(0.3-3.76843 p^2+133.228 p^4)]
qq = ArcTan \left[ \frac{\left(-A_1^2 + A_2\right)^{1/2}}{A_1} \right]
ArcTan [(0.3(1+3.58889p^2)^2)]
                              \sqrt{\left(-\left(\left(11.1111\left(0.3-3.76843\,p^2+133.228\,p^4\right)^2\right)/\left(1+3.58889\,p^2\right)^4\right)} +
                                                     \left(3.33333\,\left(0.3+2.15333\,p^2+1234.55\,p^4\right)\right)\,\big/\,\left(1+3.58889\,p^2\right)^2\right)\,\Big)\,\Big/
                  (0.3 - 3.76843 p^2 + 133.228 p^4)
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$$ee = -\frac{1}{\Omega} Log[Abs[\lambda 1]]$$

$$-\frac{1}{2 p \pi} \text{Log} \left[ \text{Abs} \left[ \left( 3.33333 \left( 0.3 - 3.76843 \, \text{p}^2 + 133.228 \, \text{p}^4 \right) \right) / \left( 1 + 3.58889 \, \text{p}^2 \right)^2 + \sqrt{\left( \left( 11.1111 \left( 0.3 - 3.76843 \, \text{p}^2 + 133.228 \, \text{p}^4 \right)^2 \right) / \left( 1 + 3.58889 \, \text{p}^2 \right)^4 - \left( 3.33333 \left( 0.3 + 2.15333 \, \text{p}^2 + 1234.55 \, \text{p}^4 \right) \right) / \left( 1 + 3.58889 \, \text{p}^2 \right)^2 \right) \right] \right]}$$

$$AD = 1 - Exp\left[-2 \text{ Pi ee } \frac{\Omega}{qq}\right]$$

$$\begin{array}{l} 1 - Abs \left[ \left( 3.33333 \, \left( 0.3 - 3.76843 \, p^2 + 133.228 \, p^4 \right) \right) \, \middle/ \, \left( 1 + 3.58889 \, p^2 \right)^2 + \\ \sqrt{ \left( \left( 11.1111 \, \left( 0.3 - 3.76843 \, p^2 + 133.228 \, p^4 \right)^2 \right) \, \middle/ \, \left( 1 + 3.58889 \, p^2 \right)^4 - } \\ \left( 3.33333 \, \left( 0.3 + 2.15333 \, p^2 + 1234.55 \, p^4 \right) \right) \, \middle/ \end{array}$$

## Plot[(AD) \* 100, {p, 0, .2}]

