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**Exponential growth model: from horizontal to linear asymptote.** (English) Zbl 1296.62140  
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Summary: We present a smooth function that can be used as regression curve for modeling growth phenomena requiring an increasing curvilinear concave asymptote. This model is obtained as the product of a concave asymptotic curve and the exponential model. In addition to its increasing character with a curvilinear asymptote, including horizontal or linear increasing asymptote, the resulting model provides curves with a single inflection point. Numerical examples are presented.

**MSC:**

62J02 General nonlinear regression

65D10 Numerical smoothing, curve fitting

**Keywords:**

concave curvilinear asymptote; exponential model; growth model; single inflection point

**Full Text:** [DOI](#)

**References:**

- [1] DOI: 10.1086/401873 · doi:10.1086/401873
- [2] DOI: 10.1111/j.1745-5871.2007.00457.x · doi:10.1111/j.1745-5871.2007.00457.x
- [3] DOI: 10.1080/02626660109492838 · doi:10.1080/02626660109492838
- [4] DOI: 10.1007/BF01582221 · Zbl 0842.90106 · doi:10.1007/BF01582221
- [5] DOI: 10.1137/0806023 · Zbl 0855.65063 · doi:10.1137/0806023
- [6] Dubeau F., *Mathematical Modelling and Applied Computing* 2 pp 269– (2011)
- [7] Dubeau F., *Mathematical Modelling and Applied Computing* 2 pp 283– (2011)
- [8] DOI: 10.1504/IJHST.2012.047430 · doi:10.1504/IJHST.2012.047430
- [9] DOI: 10.1061/(ASCE)0733-9429(2006)132:5(482) · doi:10.1061/(ASCE)0733-9429(2006)132:5(482)
- [10] Huet, S., Jolivet, E., Messéan, A. (1992). *La Régression Non Linéaire: Méthodes et Application en Biologie*. Paris: INRA.
- [11] DOI: 10.3923/ja.2003.223.236 · doi:10.3923/ja.2003.223.236
- [12] DOI: 10.1002/bimj.4710340705 · Zbl 04510738 · doi:10.1002/bimj.4710340705
- [13] Jameson G., *Mathematical Gazette* 90 pp 223– (2006) · Zbl 05641975 · doi:10.1017/S0025557200179628
- [14] DOI: 10.3844/jmssp.2005.225.233 · doi:10.3844/jmssp.2005.225.233
- [15] DOI: 10.1016/j.advwtres.2007.05.002 · doi:10.1016/j.advwtres.2007.05.002
- [16] DOI: 10.1006/jmaa.1993.1361 · Zbl 0797.34006 · doi:10.1006/jmaa.1993.1361
- [17] DOI: 10.1590/S0103-90162011000100016 · doi:10.1590/S0103-90162011000100016
- [18] DOI: 10.1073/pnas.72.11.4327 · doi:10.1073/pnas.72.11.4327
- [19] DOI: 10.1623/hysj.51.3.365 · doi:10.1623/hysj.51.3.365
- [20] Philip M., *Measuring Trees and Forests*. 2nd ed. (1994)
- [21] Ratkowsky D., *Nonlinear Regression Modeling* (1983) · Zbl 0572.62054
- [22] Ratkowsky D., *Handbook of Nonlinear Regression Models* (1989) · Zbl 0705.62060
- [23] DOI: 10.1139/f81-153 · doi:10.1139/f81-153
- [24] Scitovski R., *Economics Analysis* 19 pp 65– (1985)
- [25] DOI: 10.1002/0471725315 · doi:10.1002/0471725315
- [26] DOI: 10.1016/S0025-5564(02)00096-2 · Zbl 0993.92028 · doi:10.1016/S0025-5564(02)00096-2
- [27] DOI: 10.1061/(ASCE)0733-9496(1999)125:1(48) · doi:10.1061/(ASCE)0733-9496(1999)125:1(48)
- [28] DOI: 10.1016/S0378-1127(96)03966-7 · doi:10.1016/S0378-1127(96)03966-7
- [29] DOI: 10.1006/anbo.1996.0334 · doi:10.1006/anbo.1996.0334

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