

# asymptote\*

*pahio*<sup>†</sup>

2013-03-21 17:46:10

If a plane curve  $\gamma$  has a branch continuing infinitely far from the origin  $O$ , then  $\gamma$  may have an *asymptote*: The direct line  $l$  is an asymptote of  $\gamma$ , if

$$\lim_{d(P, O) \rightarrow \infty} d(P, l) = 0,$$

where  $d(P, O)$  means the distance of the point  $P$  of the branch from the origin and  $d(P, l)$  the distance of  $P$  from the line  $l$ .

**Examples:** The hyperbola  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$  has the asymptotes  $y = \pm \frac{b}{a}x$ ; the curve  $y = \frac{\sin x}{x}$  the asymptote  $y = 0$ .

---

\**Asymptote* created: *2013-03-21* by: *pahio* version: *36100* Privacy setting: *1*  
(*Definition*) *51N99*

<sup>†</sup>This text is available under the Creative Commons Attribution/Share-Alike License 3.0. You can reuse this document or portions thereof only if you do so under terms that are compatible with the CC-BY-SA license.