

グラフの作成

次の関数のグラフを書け。(凹凸も調べ(除※)、増減表を必ず明記すること。両端の極限も求め、漸近線が存在すればそれも記すこと。)

(1) $f(x) = \frac{1}{x^2 + 1}$

(2) $f(x) = \frac{x}{x^2 + 1}$

(3) $f(x) = \frac{x^2}{x - 1}$

(4) $f(x) = \frac{x^3}{x^2 - 1}$

(5) $f(x) = \frac{x^3 + 1}{x}$

(6) $f(x) = x + \sqrt{1 - x^2}$

(7) $f(x) = 2x + \sqrt{x^2 - 1}$

(8) $f(x) = xe^x$

(9) $f(x) = x^2e^x$

(10) $f(x) = \frac{x}{e^x}$

(11) $f(x) = e^{-x^2}$

(12) $f(x) = e^{\frac{1}{x}}$

(13) $f(x) = \frac{e^x + e^{-x}}{2}$

(14) $f(x) = \frac{e^x - e^{-x}}{2}$

(15) $f(x) = e^{-x} \sin x$
($0 \leq x \leq 4\pi$)

※(16) $f(x) = x^x$

(17) $f(x) = x \log x$

(18) $f(x) = \frac{\log x}{x}$

(19) $f(x) = \frac{x}{\log x}$

(20) $y^2 = x^2(4 - x^2)$

(21) $y^2 = x^2(x + 1)$

(22) $x^2y^2 = x^2 - y^2$

(23)
$$\begin{cases} x(\theta) = a(\theta - \sin \theta) \\ y(\theta) = a(1 - \cos \theta) \end{cases}$$

($0 \leq \theta \leq 2\pi$)

(24)
$$\begin{cases} x(\theta) = a \cos^3 \theta \\ y(\theta) = a \sin^3 \theta \end{cases}$$

($0 \leq \theta \leq 2\pi$)