

Asymptotes to function graph

Find the domain of definition of a function and equations of asymptotes to the function graph.

1. $f : y = \frac{1}{x^2 - 1}$ $(D(f) = \mathbb{R} - \{-1, 1\}, \text{ABS: } x = -1, x = 1, \text{ASS: } y = 0 \text{ pre } x \rightarrow \pm\infty),$

2. $f : y = \frac{x+1}{x^2 - 1}$ $(D(f) = \mathbb{R} - \{-1, 1\}, \text{ABS: } x = 1, \text{ASS: } y = 0 \text{ pre } x \rightarrow \pm\infty)$

3. $f : y = \frac{x^2 + 1}{3x}$ $\left(D(f) = \mathbb{R} - \{0\}, \text{ABS: } x = 0, \text{ASS: } y = \frac{1}{3}x \text{ pre } x \rightarrow \pm\infty \right)$

4. $f : y = 3x + \frac{3}{x-2}$ $(D(f) = \mathbb{R} - \{2\}, \text{ABS: } x = 2, \text{ASS: } y = 3x \text{ pre } x \rightarrow \pm\infty),$

5. $f : y = 2x - \frac{\cos x}{x}$ $(D(f) = \mathbb{R} - \{0\}, \text{ABS: } x = 0, \text{ASS: } y = 2x \text{ pre } x \rightarrow \pm\infty),$

6. $f : y = \sqrt{x^2 + 1}$ $(D(f) = \mathbb{R}, \text{ABS: } \text{nemá}, \text{ASS: } y = x \text{ pre } x \rightarrow \infty, y = -x \text{ pre } x \rightarrow -\infty),$

7. $f : y = 1 + 2^{\frac{1}{x}}$ $(D(f) = \mathbb{R} - \{0\}, \text{ABS: } x = 0, \text{ASS: } y = 2 \text{ pre } x \rightarrow \pm\infty),$

8. $f : y = \log_2(4 - x^2)$ $(D(f) = (-2, 2), \text{ABS: } x = -2, x = 2, \text{ASS: } \text{nemá}).$

9. $f : y = x + 2\arctg x$
 $(D(f) = \mathbb{R}, \text{ABS: } \text{nemá}, \text{ASS: } y = x + \pi \text{ pre } x \rightarrow \infty, y = x - \pi \text{ pre } x \rightarrow -\infty)$