

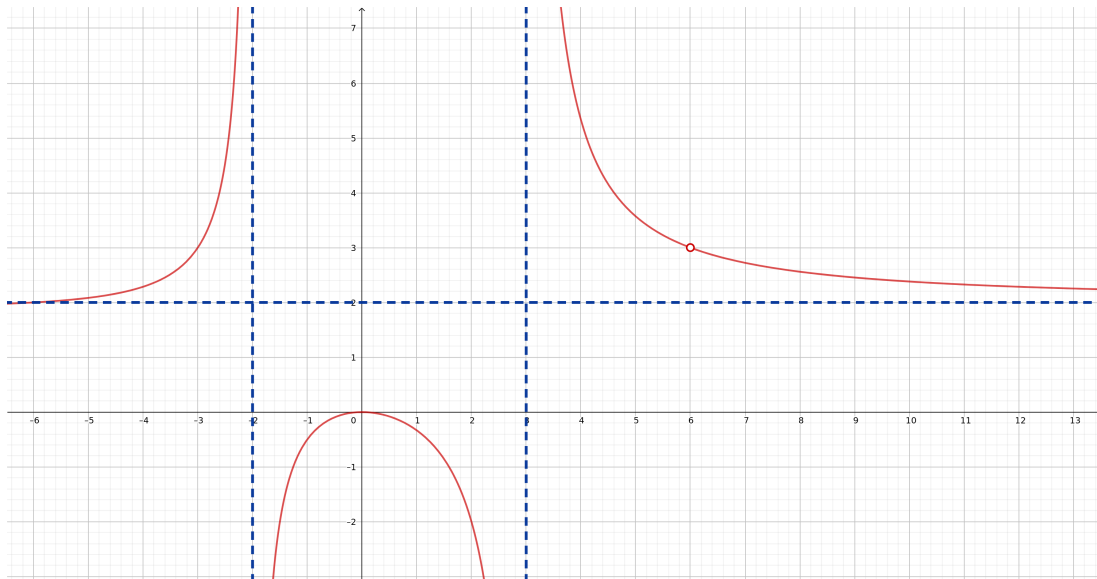
2nd homework till 9th January 23:59

1. Sketch the graph of $f(x) = \frac{\pi}{4} + 2\arctan(1-x)$. Then sketch the graphs of

- (a) $-f(x)$
- (b) $|f(x)|$
- (c) $-|f(x)|$
- (d) $f(|x|)$
- (e) $f(-|x|)$

(Please, try it without computer first and sketch the graph with hand.)

- 2. Find $x \in \mathbb{R}$ such that: $2 - \cos(2x) - 3 \sin x \geq 0$
- 3. Find the domain of the function $g(x) = \cot(3x + \frac{\pi}{3})$.
- 4. Find the possible formula for this function. It is not necessary to find exactly the pictured function - just be close to it. (Hint: What is the domain? The limits?)



- 5. The half-life of radioactive strontium-90 is 28.8 years. You started with 100 mg of strontium. How long will it take for 93.9% of the strontium to disappear? (Hint: Find the formula for the exponential decay.)
- 6. Find a polynomial $h(x)$ with zeros at $x = 2$, $x = -1$, $x = -2$ and $x = 1$ point through the point $[0; -3]$.