FCS
Math: Functions
Exercises

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Exercises

Exercise 1. *Given the functions $f : \mathbb{R} \longrightarrow \mathbb{R}, \uparrow$ and $g : \mathbb{R} \longrightarrow \mathbb{R}, \downarrow$, prove that the function $f \circ g : \mathbb{R} \longrightarrow \mathbb{R}$ is $\downarrow$.*

Exercise 2. *Given the functions $f : \mathbb{R} \longrightarrow \mathbb{R}$, even and any $g : \mathbb{R} \longrightarrow \mathbb{R}$, function $g \circ f : \mathbb{R} \longrightarrow \mathbb{R}$ is even.*

Exercise 3. *Find examples of functions $f : \mathbb{R} \longrightarrow \mathbb{R}$, even and any $g : \mathbb{R} \longrightarrow \mathbb{R}$, odd such that $f + g$ is neither odd nor even.*

Exercise 4. *Find examples of functions $f : \mathbb{R} \longrightarrow \mathbb{R}, \uparrow$ and $g : \mathbb{R} \longrightarrow \mathbb{R}, \downarrow$ such that $f \cdot g$ is neither increasing nor decreasing.*

Exercise 5. *Draw the graph of the quasi-function $f(x) = \sin(x^2)$. Find the existences field, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 6. *Draw the graph of the quasi-function $f(x) = \arcsin(2^x)$. Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 7. *Draw the graph of the quasi-function $f(x) = frac1x - 1$. Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 8. *Draw the graph of the quasi-function $f(x) = fracxx - 1$. Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 9. *Draw the graph of the quasi-function $f(x) = fracx\sqrt{x-1}$. Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 10. *Draw the graph of the quasi-function* $f(x) = frac\sqrt{x}\sqrt{x-1}$. *Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 11. *Draw the graph of the quasi-function* $f(x) = \sqrt{\frac{x}{x-1}}$. *Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 12. *Draw the graph of the quasi-function* $f(x) = 2^{\arctan(x)}$. *Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*

Exercise 13. *Draw the graph of the quasi-function* $f(x) = \log(\mid x + 1 \mid)$. *Find the existences file, intersection with the axis, zeroes, positivity and increasing intervals. Find maximun and minimums.*