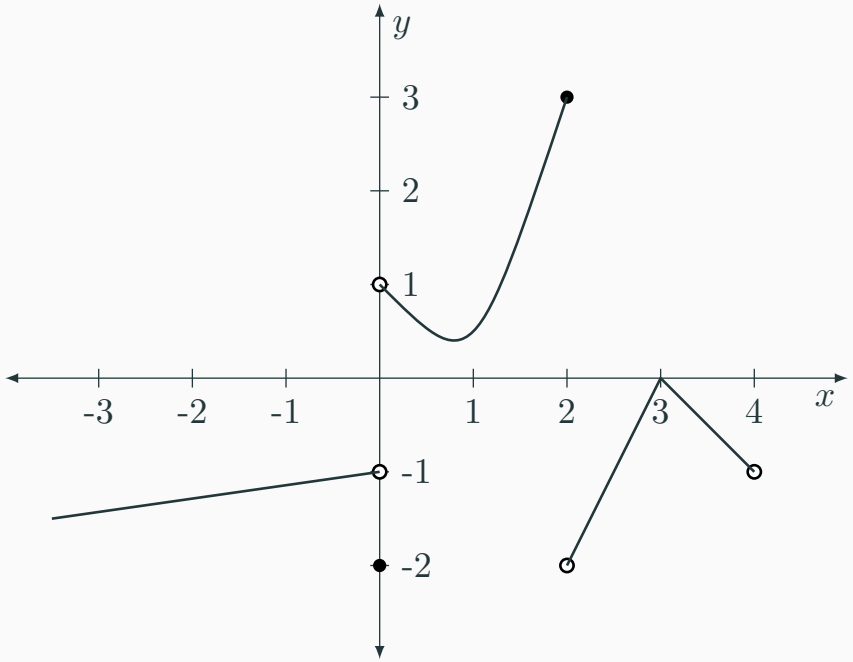
Question 1

Which sample exam question from the oral exam study guide would you like to answer? Please give the question's number and letter, and then describe your solution.

Question 2

1. What is $lim_{x \to 2^-} f(x)$?
2. What are the critical numbers of f belonging to the open interval $(-3, 4)$?
3. Is $f'(-2)$ or $f'(1.5)$ larger?
4. True/False: f is continuous at $x = 3$.



Question 3

On what intervals is the graph of the function $f(x) = x + \frac{1}{x}$ concave up? concave down?

Question 4

Let $f'(x) = \frac{1}{x^2} + x$ and $f(1) = 2$. Find a formula for $f(x)$.

Bonus Question!

Sketch or describe the graph of a function f on the interval $(0, 5)$ such that

1. $f'(x) < 0$ for all x in $(0, 5)$
2. $f''(x) > 0$ for all x in $(0, 5)$

Rubric Question 2

1. Answer: 3. Worth 2 points.
2. Answer: x = 0,2,3. Worth 1 point for each correct. -1 point for each incorrect (cannot be less than 0 points total).
3. Answer: f'(1.5) is larger. 2 points.
4. Answer: True. 2 points.
5. +1 bonus point no matter what.

Rubric Question 3

2 points for mentioning that f” is relevant

1 point for mentioning the sign line of f”

3 points for saying that if f” is positive then f is concave up and/or that f” is negative then f is concave

2 points for finding f”

1 point for finding that f” changes sign at 0

1 point for correct final answer

Rubric Question 4

4 points for saying “integral” or “antiderivative”

1 point for saying “+ C”

2 points for the correct integal (1 point per summand)

1 point for trying to plug-in to find C

1 point for correctly finding C

1 point for correct final answer

Bonus Question Rubric

All or nothing. Worth 4 points. Typical Answer looks like an upside-down graph of $\sqrt{x}$.