

Present neatly on separate paper. Justify for full credit. No Calculators.

Name _____ Score _____ ~20 minutes / A

1. Find the domain of $f(x) = \frac{\sqrt{7-x}}{x-6} + \frac{1}{\sqrt{x-5}}$.

2. Sketch the graph of the function:

$$f(x) = \begin{cases} -1, & x \leq -5 \\ \sqrt{25 - x^2}, & -5 < x < 5 \\ x - 5, & x \geq 5 \end{cases}$$

3. Find the inverse $f^{-1}(x)$ or explain why it does not exist.

$$f(x) = 3 + 4x^5.$$

4. Briefly describe what the expression multi-representational approach to problem-solving means.

Present neatly on separate paper. Justify for full credit. No Calculators.

Name _____ Score _____ ~20 minutes / F

1. Find the domain of $f(x) = \frac{1}{\sqrt{x-3}} + \frac{\log x}{x-4}$.

2. Find a formula for $f \circ g \circ h$ and state the domain of this composition if

$$f(x) = \frac{x}{x-1}, \quad g(x) = \frac{1}{x}, \quad h(x) = x^2 - 1$$

3. Find the inverse $f^{-1}(x)$ or explain why it does not exist.

$$f(x) = (x-1)^2.$$

4. Two functions $f(x)$ and $g(x)$ have domains A and B, respectively.

State the domains of $f+g$, $f-g$, fg , $\frac{f}{g}$. Briefly explain your answers.