Algebra II | Activity 0103 | Name:
Dr. Paul L. Bailey | Wednesday, January 3, 2023

Problem 1. (Domain and Holes)
Let

$$f(x) = \frac{x^2 - 3x - 28}{x^2 - 9x + 20}.$$

State domain of f. Then, state its zeros, poles, and holes.

Problem 2. (Rational Inequalities)
Let

$$f(x) = \frac{x^2 - 3x - 28}{x^2 - 9x + 20}.$$

Draw a sign chart for $f(x)$. Then, solve the given inequality. State the solution set.

Problem 3. (Adding Rational Functions)
Let

$$f(x) = \frac{3}{x^2 - 3x - 28} \quad \text{and} \quad g(x) = \frac{x}{x^2 - 9x + 20}.$$

Find $f(x) + g(x)$. State your answer in "lowest form".

Problem 4. (Solving Rational Equations)
Solve the rational equation. Write the solution set.

(a) $\dfrac{x-3}{x+5} = \dfrac{x+1}{x-7}$

(b) $\dfrac{x+3}{x-5} = \dfrac{x}{x^2 - 9x + 20}$