

1. Find the interval at which the inequality

$$\frac{x}{x+1} < 0 \tag{1}$$

holds.

2. Find all $\theta \in [0, 2\pi]$ that satisfies the equation

$$\sin^2(\theta) - 2\sin(\theta) + 1 = 0 \tag{2}$$

hint: Substitute $\sin(\theta)$ with x , solve the quadratic equation for x , then find θ .

3. If $f(x) = \frac{1}{x-1}$ and $g(x) = 2x + 5$, then find the domain of $f(g(x))$.