Read directions carefully and show all your work. Partial credit will be assigned based upon the correctness, completeness, and clarity of your answers.

1. (6 pts) Find the domain and range of \( f(x) = \frac{1}{1 - \sqrt{x}} \).

\[ f(x) = \frac{1}{1 - \sqrt{x}} \]

\[ \text{Domain: } \left[ 0, 1 \right) \cup (1, \infty) \]

Notice that outputs of the function cannot equal 0 or any value between 0 and 1.

\[ \text{Range: } (-\infty, 0) \cup (1, \infty) \]

\[ \text{Graph has a vertical asymptote at } x = 1 \]

2. (4 pts) Determine if the function \( f(x) = \frac{1}{x^2} \) is even, odd, or neither.

To determine if \( f \) is even or odd plug in \(-x\)

\[ f(-x) = \frac{1}{(-x)^2} = \frac{1}{x^2} = f(x) \] for every \( x \) in the domain of \( f \)

\[ f(-x) = f(x) \Rightarrow f \text{ is even} \]

Since \( f \) is even its graph is symmetric about the \( y \)-axis.