

- Sketch the graph of $g(x) = \frac{1}{x-1} + 2$. Domain? Range? Asymptotic behavior?

THE GRAPH OF $g(x)$ IS THE GRAPH OF $y = \frac{1}{x}$

SHIFTED 1 UNIT RIGHT AND 2 UNITS UP.

H.A. SHIFTS TO $y = 2$. V.A. SHIFTS TO $x = 1$.

THE DOMAIN AND RANGE OF $g(x)$ ARE LIKEWISE

THE APPROPRIATELY SHIFTED VERSIONS OF THE

DOMAIN AND RANGE OF $y = \frac{1}{x}$.

$$\begin{aligned} \text{DOMAIN OF } g(x) &= \text{ALL REAL NUMBERS EXCEPT } x=1 \\ &= (-\infty, 1) \cup (1, \infty) \end{aligned}$$

$$\begin{aligned} \text{RANGE OF } g(x) &= \text{ALL REAL NUMBERS EXCEPT } y=2 \\ &= (-\infty, 2) \cup (2, \infty) \end{aligned}$$

