

Useful Guidelines:

To analyze the graph of a rational function, $R(x) = \frac{p(x)}{q(x)}$, in lowest terms:

- * Step 1: Find the domain of the rational function.
- * Step 2: Find the x -intercept(s), if any (let $p(x) = 0$ when $R(x)$ is in lowest term), and the y -intercept(s), $R(0)$.
- * Step 3: Write R in lowest term and find the real zeros of the denominator (vertical asymptotes).
- * Step 4: Find the horizontal or slant asymptotes, if any.
- * Step 5: Find the intervals on which R is above the x -axis and the intervals on which R is below the x -axis.
[Hint: pick a point between the zeros obtained from both the numerator and the denominator.]
- * Step 6: Graph the asymptotes, if any, plot the points, connect the points and graph R .

Analyze the graph of each function by following Step 1 through 6 above.

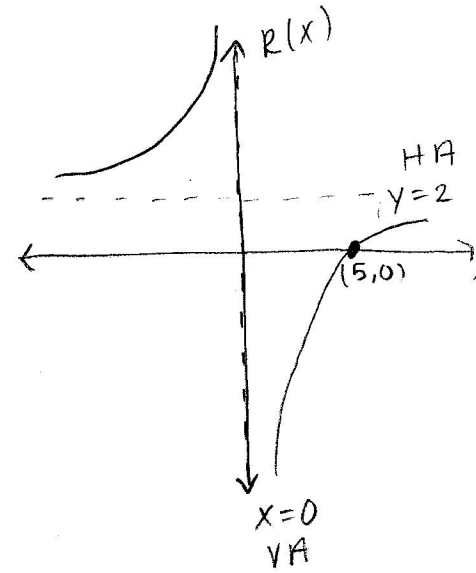
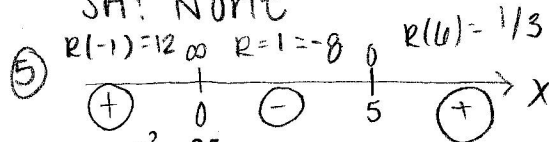
1) $R(x) = \frac{2x-10}{x}$

① d: $\{x \mid x \neq 0\}$ or $(-\infty, 0) \cup (0, \infty)$

② x -int: $(5, 0)$ | $2x - 10 = 0$
 y -int: None

③ $R(x) = \frac{2x-10}{x} = \frac{2(x-5)}{x}$ "lowest term"

④ VA: $x = 0$
 HA: $y = 2$
 SA: None



2) $R(x) = \frac{x^2-25}{x-5}$

① d: $\{x \mid x \neq 5\}$

② x -int: $(5, 0)$ ($x^2 - 25 = 0$) y -int: $(0, 5)$

③ $R(x) = \frac{x^2-25}{x-5} = \frac{(x+5)(x-5)}{x-5} = x+5$ $x = -5$

④ VA: None
 HA: None
 SA: None

