

COLLEGE ALGEBRA

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 Class Time: 11:30 A.M Date: 7/8/08

GPS # 38 4.5 RATIONAL FUNCTIONS AND RATIONAL EQUATIONS II

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 .

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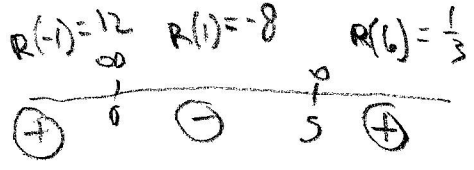
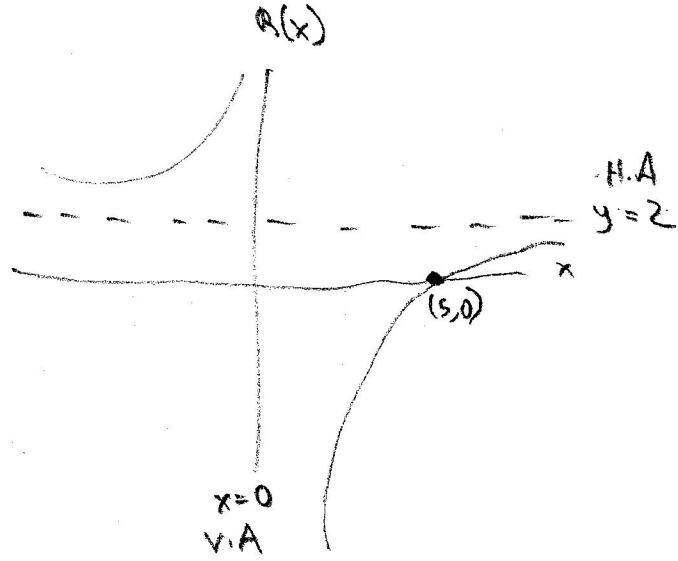
Analyze the graph of each function by following Step 1 through 6 above.

1) $R(x) = \frac{2x-10}{x} = \frac{2(x-5)}{x}$

$x \neq 0$

D: $\{x | x \neq 0\}$

- x-int: $(5, 0)$
- y-int: None
- v.A: $x=0$
- H.A: $y=2$



2) $R(x) = \frac{x^2-25}{x-5} = 0$

D: $\{x | x \neq 5\}$

x-int: $(x-5)(x+5) = 0$
 $x = 5$ or $x = -5$

- H.A: None
 - v.A: none
 - $R(-6) = -1$ $R(0) = 5$ $R(6) = 11$
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y-int: $(0, 5)$

$R(x) = \frac{(x-5)(x+5)}{(x-5)} = x+5$

