

NAME _____

$$\text{Let } h(x) = \frac{g(x)}{2x^2 + 4x - 30}.$$

Rewrite $h(x)$ by factoring the denominator.

Work each problem separately. You do not have to satisfy all of the conditions until #5.

Find $g(x)$ such that

1. $\lim_{x \rightarrow 3} h(x)$ exists
2. $y = 2$ is a horizontal asymptote for $h(x)$
3. $x = -5$ is a vertical asymptote for $h(x)$
4. $h(4) = 0$
5. All of the above conditions hold.