The graph shown below is that of a rational function $R(x)$ with vertical asymptotes of $x = 1$ and $x = -1$, zeros of $x = 2$ and $x = -2$ and a horizontal asymptote of $y = 1/2$. Find a symbolic representation of $R(x)$.

Solution: Since the rational function has vertical asymptotes at $x = 1$ and $x = -1$, the denominator must have $x - 1$ and $x + 1$ as factors. The numerator must have $x - 2$ and $x + 2$ as factors. Since $y = 1/2$ is the horizontal asymptote, the ratio of the coefficients of $x^2$ in the numerator and in the denominator must be $1/2$. Thus, $p(x) = \frac{(x-2)(x+2)}{2(x-1)(x+1)}$ gets the job done.