Find all vertical and horizontal asymptotes of the rational function

\[ f(x) = \frac{(x - 3)(x + 2)}{(2x - 5)(3x + 7)}. \]

Solution. The zeros of the denominator are \( x = 5/2 \) and \( x = -7/3 \), which are not zeros of the numerator. Therefore both the lines \( x = 5/2 \) and \( x = -7/3 \) are vertical asymptotes. The degree of the numerator and denominator are both 2, so the horizontal asymptote is the ratio of the coefficients of the \( x^2 \) terms, namely, \( 1/2 \cdot 3 = 1/6 \). Thus \( y = 1/6 \) is the horizontal asymptote.