

Math 2143 - Brief Calculus with Applications

Quiz #8 - 2008.03.26

Solutions

Consider the function:

$$r(x) = \frac{x(x+2)(x-3)}{(x-1)(x+1)} = \frac{x^3 - x^2 - 6x}{x^2 - 1}$$

1. What is the domain of $r(x)$?

The domain of $r(x)$ is $\mathbb{R} - \{-1, 1\}$.

2. Find all vertical asymptotes of $r(x)$.

The function has vertical asymptotes at $x = -1$ and $x = 1$.

3. Find all x -intercepts of $r(x)$.

The x -intercepts of $r(x)$ are at $x = 0$, $x = -2$ and $x = 3$.

4. Find the y -intercept of $r(x)$.

The y -intercept of $r(x)$ is at $(0, 0)$.

5. Find all horizontal or slant asymptotes of $r(x)$.

There are no horizontal asymptotes, but there is a slant asymptote of $y = x - 1$.