

Find the Restrictions on the Domain

We need to restrict the domain to exclude values for x that make any denominator equal to zero. Look at the following expression:

$$\frac{x^2 + 2x - 8}{x^2 + 3x - 10} \cdot \frac{3x + 15}{x + 3}$$

For the second fraction, we see that the denominator is $(x + 3)$. This denominator will equal zero when $x = -3$, so we need to exclude $x = -3$.

For the first fraction, we see that the denominator is $x^2 + 3x - 10$. We can factor it as $(x + 5)(x - 2)$. The denominator will equal zero for two cases, when $x = -5$ or when $x = 2$. So we need to exclude these two values as well.

The three restrictions are: $x = -5$, $x = -3$, and $x = 2$.