

- Let $g(x) = \frac{2x-2}{(x-1)(x-5)}$. Determine the vertical asymptotes of the graph of g .

THE DENOMINATOR IS ZERO WHEN $x=1$ OR $x=5$.

$x=5$ DOES NOT MAKE THE NUMERATOR ZERO : $2(5)-2=8$

$x=5$ IS A VERTICAL ASYMPTOTE.

$x=1$ DOES MAKE THE NUMERATOR ZERO : $2(1)-2=0$

WE CANNOT CONCLUDE ANYTHING ABOUT $x=1$ UNTIL

WE FACTOR AND CANCEL...

$$\frac{2x-2}{(x-1)(x-5)} = \frac{2(x-1)}{(x-1)(x-5)} = \frac{2}{x-5}$$

WHEN WE CHECK AGAIN FOR ZEROS OF THE DENOM.,

WE SEE ONLY $x=5$, WHICH WE ALREADY DISCUSSED.

$x=1$ IS NOT A VERTICAL ASYMPTOTE.

★ IMPORTANT: BOTH $x=1$ AND $x=5$ ARE RESTRICTED VALUES.

BUT ONLY $x=5$ GIVES US A VERTICAL ASYMPTOTE.