5. $f(x) = \ln(x-5)$

$x-5=0$

V.A. $x=5$

VERTICAL ASYMPTOTES: LOGS

SET WHAT FOLLOWS OUR LOG EQUAL TO ZERO AND SOLVE

6. $f(x) = \csc(\pi x)$

$= \frac{1}{\sin(\pi x)}$

$\sin(\pi x) = 0$

VERTICAL ASYMPTOTES: CSC, SEC, TAN, COT

① REWRITE AS A FRACTION IN TERMS OF SIN AND/OR COS

② SET DENOM. EQUAL TO ZERO AND SOLVE

$\sin 0 = 0$ $\quad \sin \pi = 0$ $\quad \sin 2\pi = 0$

$\pi x = 0$ $\quad \pi x = \pi$ $\quad \pi x = 2\pi$

$\frac{\pi x}{\pi} = \frac{0}{\pi}$ $\quad \frac{\pi x}{\pi} = \frac{\pi}{\pi}$ $\quad \frac{\pi x}{\pi} = \frac{2\pi}{\pi}$

$x=0$ $\quad x=1$ $\quad x=2$

VERTICAL ASYMPTOTES: $x=n$, n IS INTEGER

7. $f(x) = \frac{\cot x}{x}$

$= \frac{\frac{\cos x}{\sin x}}{x}$

$= \frac{\cos x}{x \sin x}$

$x \sin x = 0$

$x=0$ $\quad \sin x = 0$

$x = 0, \pi, 2\pi, 3\pi, \ldots$

$x = 0\pi, 1\pi, 2\pi, 3\pi, \ldots$

VERTICAL ASYMPTOTES

$x=0$; $x = n\pi$, n IS INT