

So $x=5$ is a rejected value for $k(x)$ since it equates the denominator to zero.

So, $k(x)$ is defined when $x \neq 5$.

or, we can say that $x=5$ is a value excluded from the domain of $k(x)$.

c) $k(x)$ is not defined when its lower part is zero

$$\text{So } (x+1)^2 - (2x-4)^2 = 0$$

$$(x+1-2x+4)(x+1+2x-4) = 0$$

$$(5-x)(3x-3) = 0$$

$$3(5-x)(x-1) = 0$$

$$\text{So, } x=5 \text{ or } x=1$$

So, $k(x)$ is not defined when $x=5$ or $x=1$

$$\begin{aligned} \text{d) } k(x) &= \frac{(x-1)(x+1)(x-3)}{3(5-x)(x-1)} \\ &= \frac{(x+1)(x-3)}{3(5-x)} \end{aligned}$$

$$k(x) = x+1$$

$$\frac{(x+1)(x-3)}{3(5-x)} = x+1$$

$$\text{So } (x+1)(x-3) = 3(x+1)(5-x)$$

$$(x+1)(x-3) - 3(x+1)(5-x) = 0$$

$$(x+1)(x-3-15+3x) = 0$$

$$(x+1)(4x-18) = 0$$

$$2(x+1)(2x-9) = 0$$

$$\text{So, } x = -1 \text{ or } x = \frac{9}{2}$$

(both accepted since they satisfy the condition) ✓

P.S.