

$$\left\{ 1, \frac{1}{2}, \frac{1}{4}, \frac{3}{4}, \frac{1}{8}, \frac{3}{8}, \dots \right\}$$

$$= \left\{ \frac{m}{2^n} : m, n \in \mathbb{N} \quad m \leq n \right\}$$

We know $2^n > m$

$$\Rightarrow \frac{m}{2^n} < 1$$

$$\lim_{(m,n) \rightarrow \infty} \frac{m}{2^n} = 0$$

Thus limit point = $[0, 1]$

$$a = 0, b = 1$$

$$3a - 4b = \boxed{-4}k$$