SOLUTIONS.

1. Given the set

$$A = \left\{ x = \frac{n}{n+1}, n \in \mathbb{N} \right\}$$

find its internal points, its accumulation points, its boundary points and its isolated points.

Internal points: None; Accumulation point:1; Boundary points: $\{\text{All}, 1\}$; Isolated points: All.

2. Solve the following equations:

- $\frac{2x-1}{3} - \frac{x-5}{6} = \frac{x-3}{4}$

$$x = -5$$

- $2(3x+1) + x - 3(2x+1) = x + 4(x-1) - (4x+3)$

$$6 = 0x \rightarrow \text{Impossible equation}$$

- $2\left(x + \frac{1}{2}\right) = 5x + 1 - 3x$

$$0x = 0 \rightarrow \text{Undetermined equation}$$

- $(1-x)^3 - (x-2)^2 = 3 - x^3$

$$x = \left\{ 2, -\frac{3}{2} \right\}$$

- $2x^2 - 5x + 3 = 0$

$$x = \left\{ \frac{3}{2}, 1 \right\}$$

- $\frac{(2x-3)^2}{4} - \frac{3}{2} + \frac{x}{2} = x(1-x)$

$$x = \left\{ \frac{6}{4}, \frac{1}{4} \right\}$$

- $2(3-2x)^3 = 8x - 16x^3 + 10$

$$x = \left\{ 1, \frac{11}{18} \right\}$$

3. Solve the following inequalities:

- $3x + \frac{2}{3} > x + 8 - 11x$

$$x > \frac{22}{39}$$

- $\frac{3x-12}{x^2-9} > 0$

$$\{-3 < x < 3\} \cup \{x > 4\}$$

- $x^2 + 2x - 3 < 0$

$$\{-3 < x < 1\}$$

- $\frac{3x^2+2x-8}{6x^2+19x+15} \leq 0$

$$\left\{-2 \leq x \leq -\frac{5}{3}\right\} \cup \left\{-\frac{3}{2} \leq x \leq \frac{4}{3}\right\}$$

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