(a) A is closed $\implies A^C$ is open. Then, $x \in A^C \implies \exists$ open ball with radius $d > 0$, $B = \{x_0 \in \mathbb{R}^n : |x_0 - x| < d\} \subset A^C$. Take any point $y \in A$. Then, $y \notin B$ as $B \subset A^C$. Then, $|y - x| \geq d$.

(b) B

(c) Consider increasing sequences $a_n = \begin{pmatrix} n + \dfrac{1}{n} \\ 0 \end{pmatrix}$ and $b_n = \begin{pmatrix} n \\ 0 \end{pmatrix}$ for $n \in \mathbb{Z}_+$. Let $A = \{a_n\}_{n=2}^{\infty}$ and $B = \{b_n\}_{b=2}^{\infty}$.

A is closed because A^C is the union of open sets $((-\infty, a_2) \times \mathbb{R}) \cup \left(\bigcup_{n=2}^{\infty} (a_n, a_{n+1}) \times \mathbb{R} \right) \cup (\mathbb{R} \times (0, \infty)) \cup (\mathbb{R} \times (-\infty, 0))$.

Similarly, B is closed because $B^C = ((-\infty, b_2) \times \mathbb{R}) \cup \left(\bigcup_{n=2}^{\infty} (b_n, b_{n+1}) \times \mathbb{R} \right) \cup (\mathbb{R} \times (0, \infty)) \cup (\mathbb{R} \times (-\infty, 0))$

However, for any $d > 0$ define $f = \left\lceil \dfrac{1}{d} \right\rceil$. Then, $|a_f - b_f| = \dfrac{1}{f} \leq d$.