

$$2. \quad (a) \quad (\sqrt{2} < x) \wedge (x < \sqrt{3})$$

$$(b) \quad \neg \left[\exists x \in \mathbb{Q}, \left(\sqrt{2} < x \right) \wedge \left(x < \sqrt{3} \right) \right]$$

$$= \forall x \in \mathbb{Q}, \left(\sqrt{2} \geq x \right) \vee \left(x \geq \sqrt{3} \right)$$

(c) All rational numbers are equal to or less than $\sqrt{2}$, or equal to or greater than $\sqrt{3}$.