

Question 5

Let x and y be two positive numbers.

$$(\sqrt{x} - \sqrt{y})^2 \geq 0$$

$$x - 2\sqrt{xy} + y \geq 0$$

$$x + y \geq 2\sqrt{xy}$$

$$\frac{x+y}{2} \geq \sqrt{xy}$$

$$\text{Hence } \sqrt{xy} \leq \frac{x+y}{2}$$