

3. (a) “If  $m$  and  $n$  are irrational numbers, where  $m \neq n$ , then  $mn$  is also irrational.”

**Disprove** this statement by means of a counter example.

**(2)**

(b) (i) Sketch the graph of  $y = |x| + 3$

(ii) Explain why  $|x| + 3 \geq |x + 3|$  for all real values of  $x$ .

**(3)**