2013 11b **2**

Evaluate $\lim_{x\to 2} \dfrac{x^3-8}{x^2-4}$.

$$\lim_{x\to 2} \frac{x^3-8}{x^2-4} = \lim_{x\to 2} \frac{(x-2)(x^2+2x+4)}{(x-2)(x+2)}$$

$$= \lim_{x\to 2} \frac{x^2+2x+4}{x+2}$$

$$= \frac{2^2+2(2)+4}{2+2}$$

$$= 3$$

State Mean: **0.93**

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by BOSTES.

Board of Studies: Notes from the Marking Centre

Many candidates had difficulty with this question.

Common problems were:

- substituting '2' into the function and giving an answer of '0' or 'undefined'
- not factorising x^3-8 or x^2-4 correctly; some factorised the difference of 2 cubes, then incorrectly factorised x^2+2x+4 so they could cancel
- thinking that finding the limit as $x\to\infty$ was required
- confusing the limit with differentiation by first principles or the quotient rule.

Source: **http://www.boardofstudies.nsw.edu.au/hsc_exams/**