SYDNEY BOYS HIGH SCHOOL
MOORE PARK, SURRY HILLS

MARCH 2005

11A CLASS TEST # 2

Mathematics

General Instructions

- Working time – 1 PERIOD
- Write using black or blue pen. Pencil may be used for diagrams.
- Board approved calculators may be used
- *All* necessary working should be shown in every question.
- Marks may not be awarded for badly arranged or messy setting out of work.

(1) Solve $|x-1|=4$

(2) Solve $|x-2|<4$

(3) Solve $|x+1|=|2x+7|$

(4) Solve $3x=|x-2|$

(5) Solve $2|x|=3+|x-1|$

(6) On a number plane, indicate the region specified by $y\leq|x-1|$ **AND** $y\leq 1$

(7) (i) Sketch the graph of $y=|x-2|$

(ii) For what values of x is $|x-2|<x$?

(8) Sketch the following graphs, clearly indicating x and y intercepts.

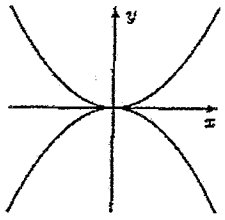
(i) $y=|x-2|(x+1)^2$

(ii) $y=x+|x|$

(9) What is the sum of the distinct solutions of the equation

$$x^2+3x+2=|x+1|$$

(10) Which of the equations given **best** decribes the graph shown?



(A) $y=|x|^2$ (B) $|y|=x^2$ (C) $y^2=x^2$

(D) $y^2=x$ (E) $\sqrt{|y|}=x$

(11) (i) For $x\le -\frac{3}{2}$ simplify $|3x-1|+|2x+3|$

(ii) For $-\frac{3}{2}<x\le\frac{1}{3}$ simplify $|3x-1|+|2x+3|$

(iii) For $x>\frac{1}{3}$ simplify $|3x-1|+|2x+3|$

(iv) Hence sketch $y=|3x-1|+|2x+3|$

(v) Hence solve $|3a-1|+|2a+3|>5$

(12) (i) Sketch $y=|x-2|$ and $y=\frac{1}{x-3}$ on the same diagram.

(ii) Hence solve $|x-2|<\frac{1}{x-3}$

(13) Solve $3x^2-2x-2\le|3x|$

End of paper