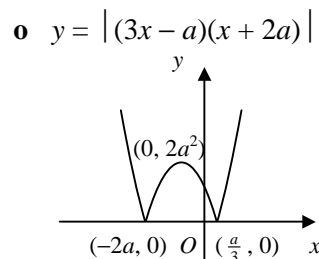
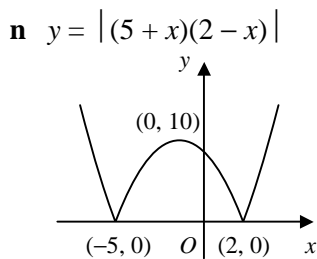
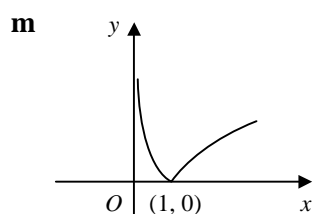
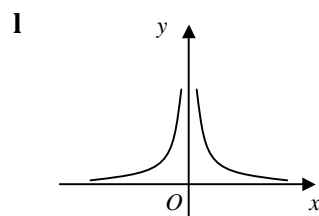
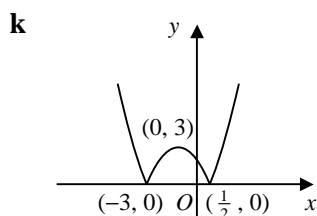
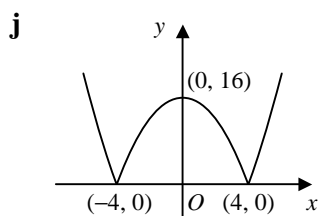
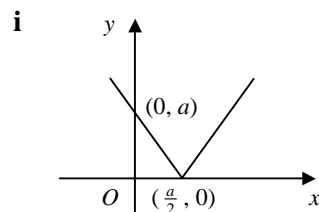
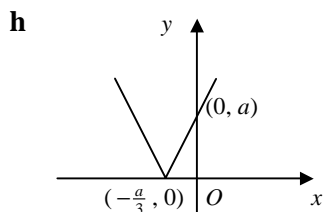
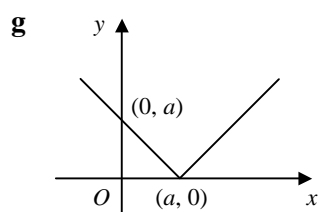
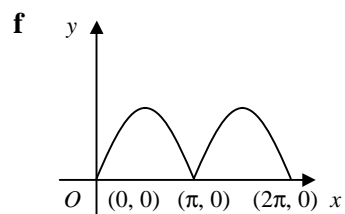
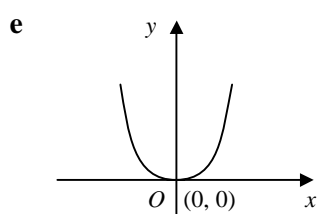
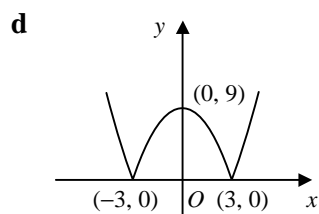
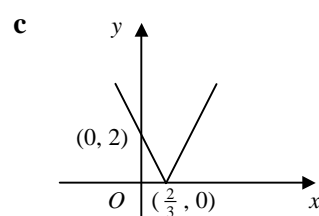
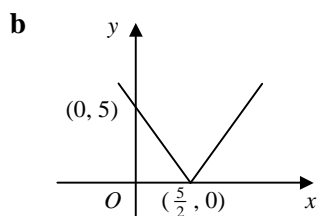
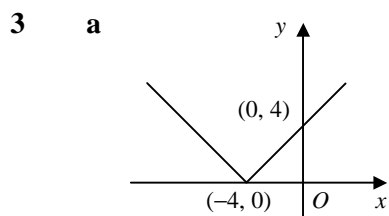


C3 FUNCTIONS

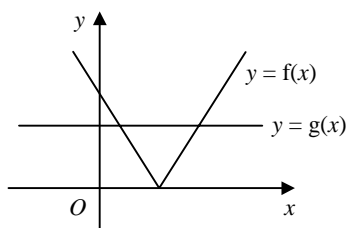
Answers - Worksheet D

1 a 2 b 1 c 6 d -2 e 4 f -3

2 a = $g(-3)$ b = $f(1)$ c = $f(9)$ d = $g(5)$ e = $g(0)$ f = $f(1)$
 = 5 = 0 = 96 = 11 = 1 = 0

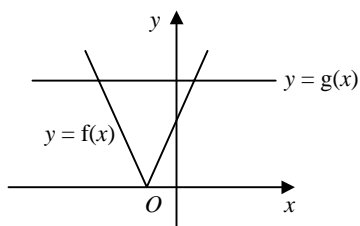


4 a i

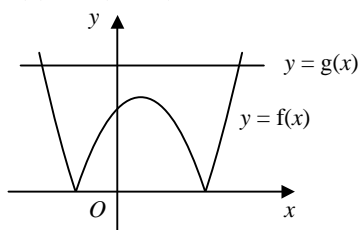


ii $2x - 3 = 2 \Rightarrow x = \frac{5}{2}$
 $-(2x - 3) = 2 \Rightarrow x = \frac{1}{2}$
 $\therefore x = \frac{1}{2}, \frac{5}{2}$

c i

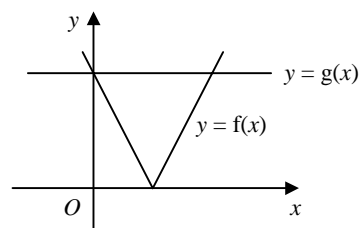


ii $4x + 3a = 5a \Rightarrow x = \frac{1}{2}a$
 $-(4x + 3a) = 5a \Rightarrow x = -2a$
 $\therefore x = -2a, \frac{1}{2}a$

e i $f(x) = |(x-2)^2 - 16|$ 

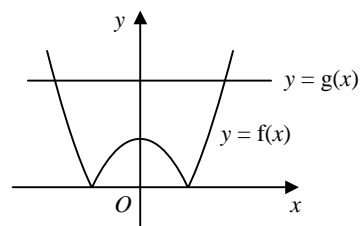
ii $x^2 - 4x - 12 = 20 \Rightarrow x^2 - 4x - 32 = 0$
 $\Rightarrow (x+4)(x-8) = 0$
 $\therefore x = -4, 8$

b i



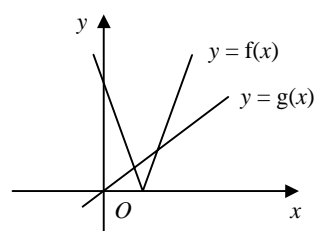
ii $7 - 3x = 7 \Rightarrow x = 0$
 $-(7 - 3x) = 7 \Rightarrow x = 4\frac{2}{3}$
 $\therefore x = 0, 4\frac{2}{3}$

d i



ii $x^2 - 4 = 9 \Rightarrow x^2 = 13$
 $\therefore x = \pm\sqrt{13}$

f i

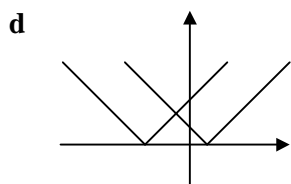


ii $2a - 5x = x \Rightarrow x = \frac{1}{3}a$
 $-(2a - 5x) = x \Rightarrow x = \frac{1}{2}a$
 $\therefore x = \frac{1}{3}a, \frac{1}{2}a$

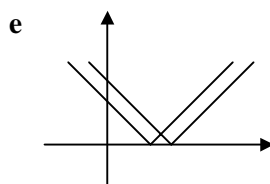
5 a $x - 5 = 3 \Rightarrow x = 8$
 $-(x - 5) = 3 \Rightarrow x = 2$
 $\therefore x = 2, 8$

b $x + 1 = 15 \Rightarrow x = 14$
 $-(x + 1) = 15 \Rightarrow x = -16$
 $\therefore x = -16, 14$

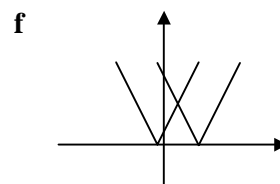
c $2x - 7 = 4 \Rightarrow x = \frac{11}{2}$
 $-(2x - 7) = 4 \Rightarrow x = \frac{3}{2}$
 $\therefore x = \frac{3}{2}, \frac{11}{2}$



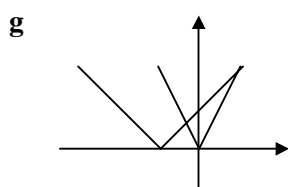
$-(x - 2) = x + 4 \Rightarrow x = -1$
 $\therefore x = -1$



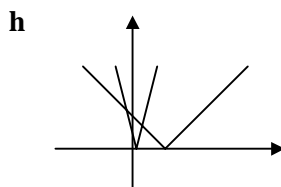
$x - 5 = 7 - x \Rightarrow x = 6$
 $\therefore x = 6$



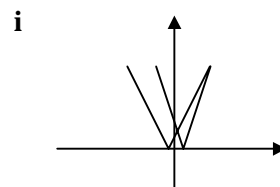
$2x + 1 = 9 - 2x \Rightarrow x = 2$
 $\therefore x = 2$



$x + 3 = 2x \Rightarrow x = 3$
 $x + 3 = -2x \Rightarrow x = -1$
 $\therefore x = -1, 3$



$4x - 1 = 2 - x \Rightarrow x = \frac{3}{5}$
 $-(4x - 1) = 2 - x \Rightarrow x = -\frac{1}{3}$
 $\therefore x = -\frac{1}{3}, \frac{3}{5}$



$3x - 4 = 2x + 3 \Rightarrow x = 7$
 $-(3x - 4) = 2x + 3 \Rightarrow x = \frac{1}{5}$
 $\therefore x = \frac{1}{5}, 7$

6 a
 $x - 20 = 2 \Rightarrow x = 22$
 $-(x - 20) = 2 \Rightarrow x = 18$
 $\therefore 18 < x < 22$

b
 $2x - 11 = 5 \Rightarrow x = 8$
 $-(2x - 11) = 5 \Rightarrow x = 3$
 $\therefore 3 \leq x \leq 8$

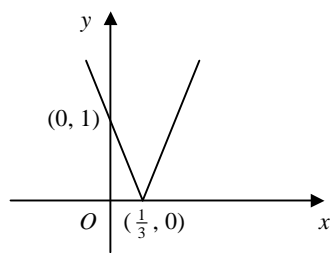
c
 $x - 17 = 12 \Rightarrow x = 29$
 $-(x - 17) = 12 \Rightarrow x = 5$
 $\therefore x < 5 \text{ or } x > 29$

d
 $5x - 22 = 40 \Rightarrow x = 12\frac{2}{5}$
 $-(5x - 22) = 40 \Rightarrow x = -3\frac{3}{5}$
 $\therefore -3\frac{3}{5} < x < 12\frac{2}{5}$

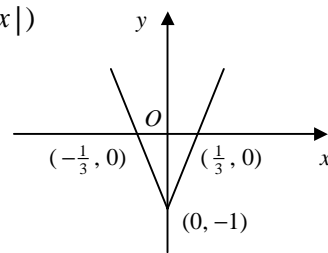
e
 $x + 4 = -(x + 1) \Rightarrow x = -\frac{5}{2}$
 $\therefore x \leq -\frac{5}{2}$

f
 $x + 2 = 2x - 5 \Rightarrow x = 7$
 $x + 2 = -(2x - 5) \Rightarrow x = 1$
 $\therefore 1 < x < 7$

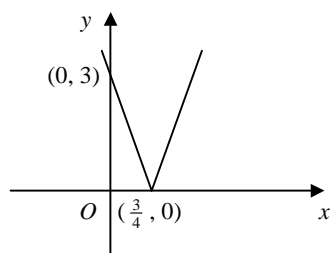
7 a $y = |f(x)|$



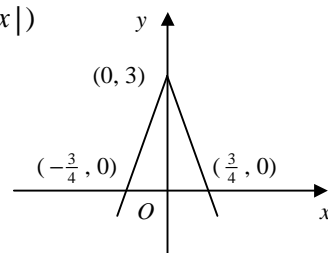
$y = f(|x|)$



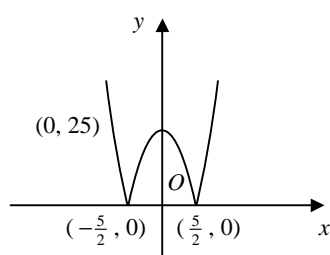
b $y = |f(x)|$



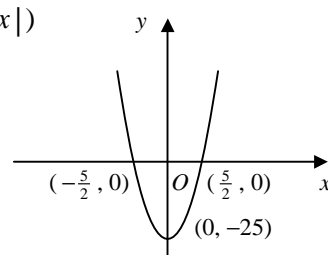
$y = f(|x|)$



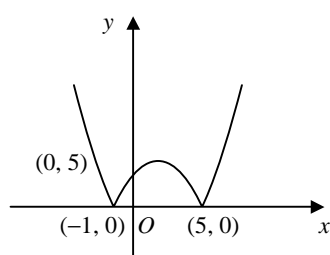
c $y = |f(x)|$



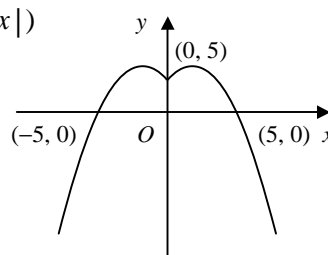
$y = f(|x|)$



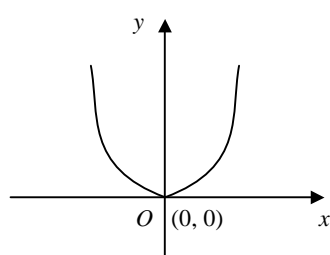
d $y = |f(x)|$



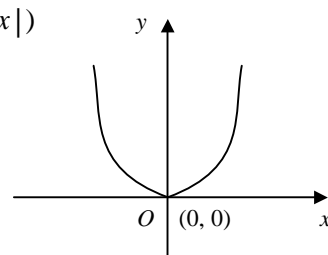
$y = f(|x|)$



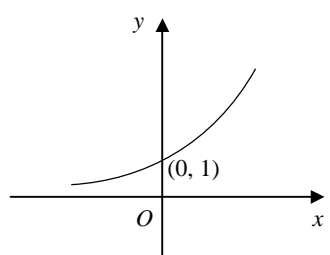
e $y = |f(x)|$



$y = f(|x|)$



f $y = |f(x)|$



$y = f(|x|)$

