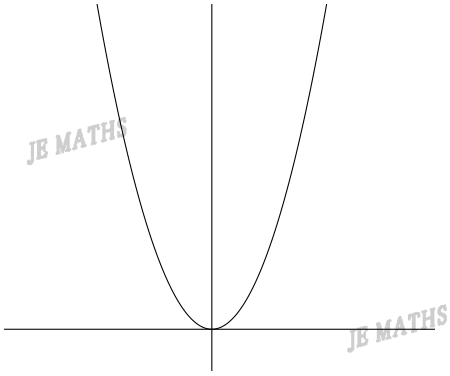
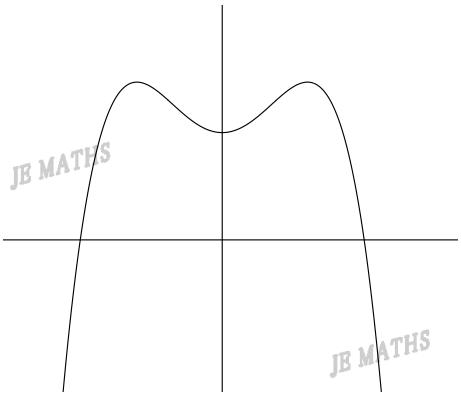
Foundation stage 1:

1. Check if the following graphs are even, odd or neither:

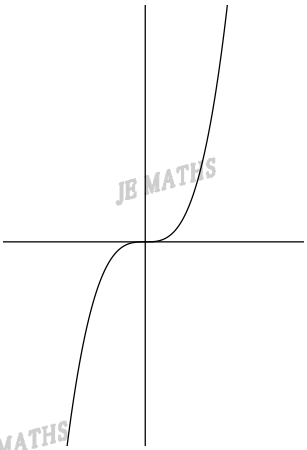
(a)



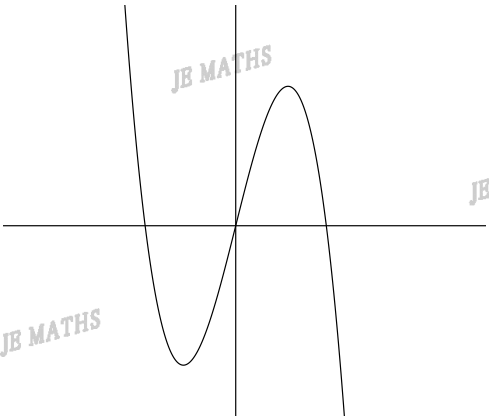
(b)



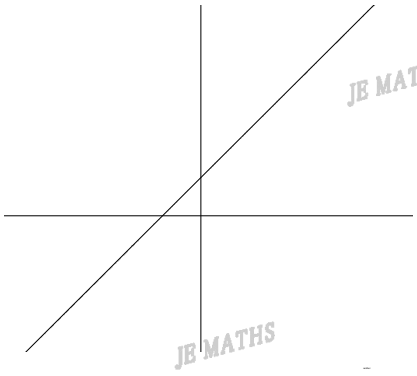
(c)



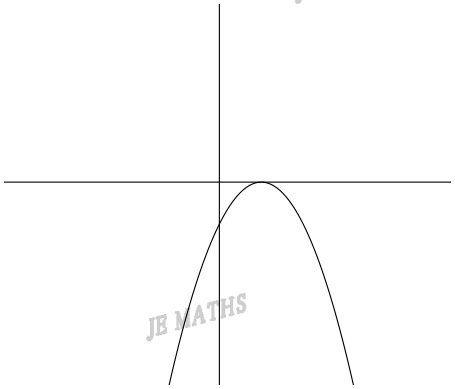
(d)



(e)



(f)



2. Given that $f(x) = x^4$.

(a) Find $f(-x)$.

(b) Hence, check if it is even, odd or neither.

3. Given that $f(x) = x^3 + 5x$.

   (a) Find:

   (i) $f(-x)$ (ii) $-f(x)$

   (b) Hence, check if it is even, odd or neither.

4. Given that $f(x) = x^4 + 5x^2 - 1$.

   (a) Find:

   (i) $f(-x)$ (ii) $-f(x)$

   (b) Hence, check if it is even, odd or neither.

5. Determine the following function are even, odd or neither by finding $f(-x)$ first:

   (a) $f(x) = x^4 - 7x^2$ (b) $f(x) = 2x - 3x^3$

   (c) $f(x) = x^4 - x^5$ (d) $f(x) = x - x^3 + x^5$

Foundation stage 2:

1. Evaluate:

   (a) $|7|$ (b) $|-7|$

   (c) $|7-11|$ (d) $4-|2^3-3^2|$

2. Solve the following absolute value equations by using a number line.

   (a) $|x|=7$ (b) $|3x|=12$

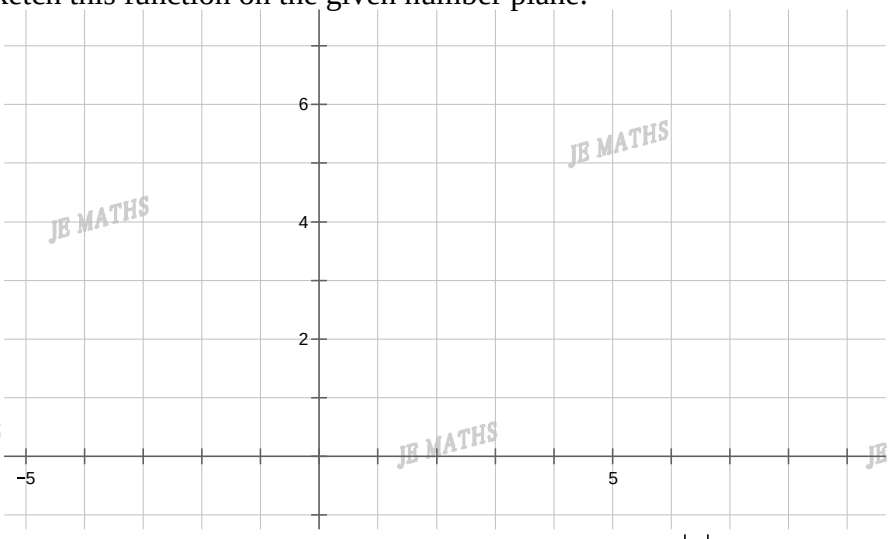
   (c) $|x-3|=2$ (d) $|x+5|=12$

3. Given that $f(x)=|x-2|$.

   (a) Fill in the table below:

x	-2	-1	0	1	2
f(x)					

   (b) Hence, sketch this function on the given number plane:



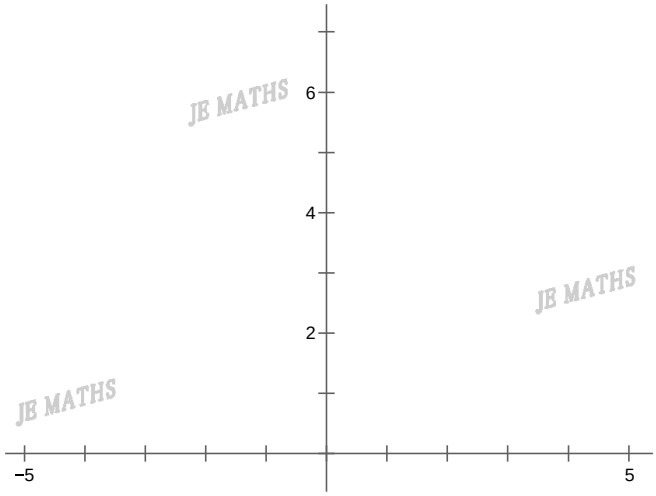
   (c) Explain how this function is shifted from the function $f(x)=|x|$.

4. Given that $g(x) = |x| + 2$.

   (a) Fill in the table below:

x	-2	-1	0	1	2
g(x)					

   (b) Hence, sketch this function on the given number plane:



   (c) Explain how this function is shifted from the function $g(x) = |x|$.

5. Check if the following statement is true if $x = -2$:

   (a) $|x| = x$

   (b) $|x| = x + 4$

   (c) $|x| = |2x + 2|$

   (d) $|x + 2| < |x| + 2$

6. Solve the following absolute value equations by using algebraic method:

   (a) $|4x| = 8$

   (b) $|4x - 3| = -1$

   (c) $|3x + 6| = 0$

   (d) $|4x - 3| = 9$

Foundation stage 1:

1. (a)
even

(b)
even

(c)
odd

(d)
odd

(e)
neither

(f)
neither

2. (a) f(-x) = $(-x)^4 = x^4$

(b) f(-x)=f(x)
even

3. (a)
(i)
f(-x) = $(-x)^3 + 5(-x)$
= $-x^3$-5x

(ii)
-f(x) = -(x ²+5x)
= -x ²5x

(b) f(-x) = −f(x)
odd

4. (a)
(i)
f(-x) = $(-x)^4 + 5(-x)^2 - 1$
= x^4+5x ²1

(ii)
-f(x) = -(x^4+5x ²1)
= -x^4-5x ²+1

(b) f(-x)≠f(x), f(-x)≠f(x)
neither

5. (a)
f(-x)= $(-x)^4 - 7(-x)^2$
f(-x)=f(x)
even

(b)
f(-x)=2(-x)-3(-x) ³=-2x+3x ³
-f(x)=-2x+3x ³
f(-x)=-f(x)
odd

(c)
f(-x)= $(-x)^4 - (-x)^5$
=$x^4 + x^5$
-f(x) = $-x^4 - x^5$
f(-x)≠f(x), f(-x)≠f(x)
neither

(d)
f(-x)=$-x - (-x)^3 + (-x)^5$=-x+x-x^5
-f(x)=-x+x ³-x^5
f(-x)=-f(x)
odd

Foundation stage 2:

1. (a)
   7

   (b)
   7

   (c)
   |-4|=4

   (d)
   4-|-1| = 4-1=3

2. Solve the following absolute value equations by using a number line.
   (a)
   $x=\pm 7$

   (b)
   $x=\pm 4$

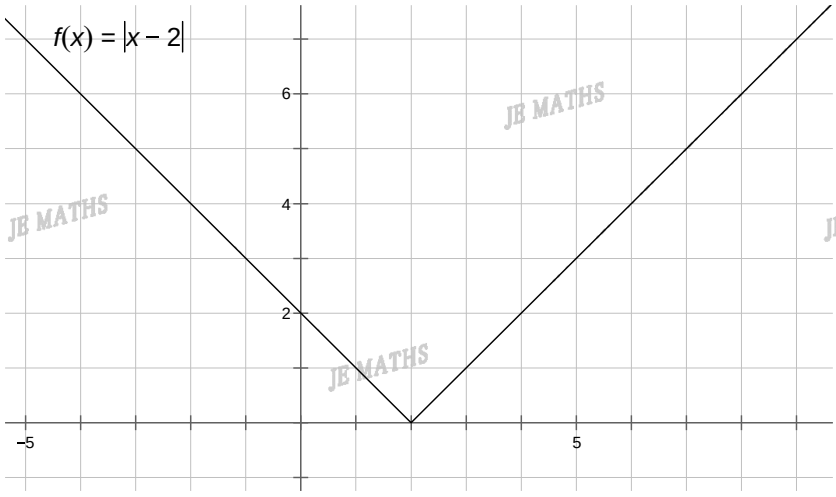
   (c)
   x=5, 1

   (d)
   x=7, -17

3. (a)

x	-2	-1	0	1	2
f(x)	4	3	2	1	0

   (b)

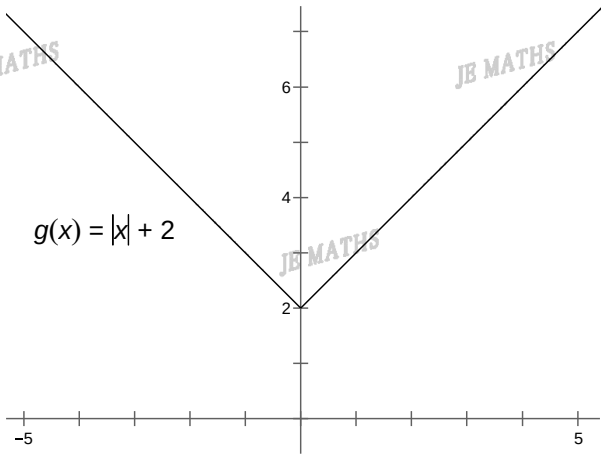


   (c) 2 units right

4. (a)

x	-2	-1	0	1	2
g(x)	4	3	2	3	4

(b)



(c) 2 units up

5. (a)
F

(b)
T

(c)
T

(d)
F

6. (a)
$4x=\pm 8$
$x=\pm 2$

(b)
no real solution

(c)
$3x+6=0$
$3x=-6$
$x=-2$

(d)
$4x-3=\pm 9$
$4x=12,\ 4x=-6$
$x=3,\ x=-3/2$