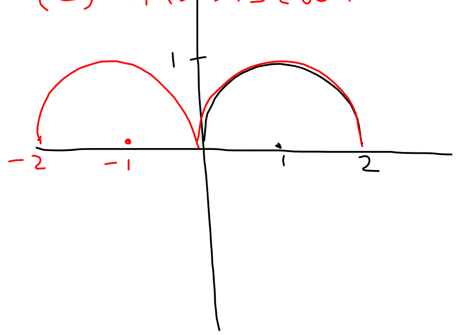
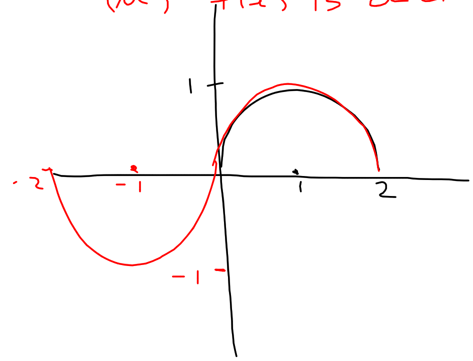
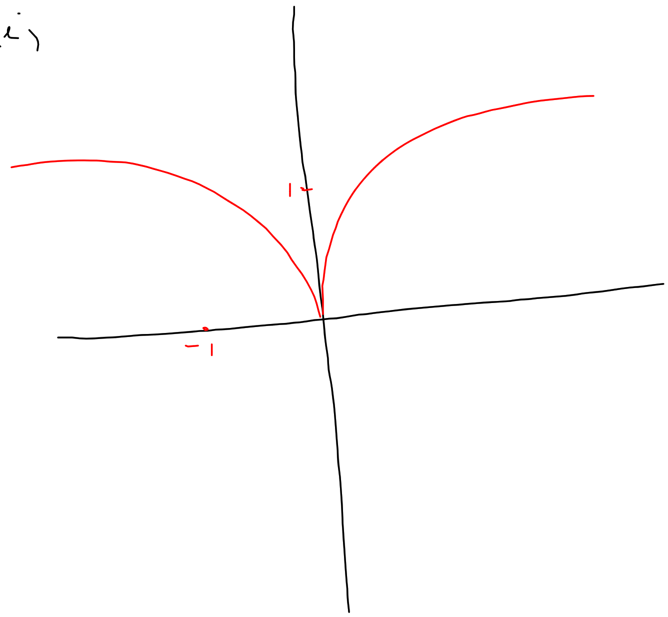
2a) (i) $f(x)$ is even



(ii) $f(x)$ is odd



2b)(i)



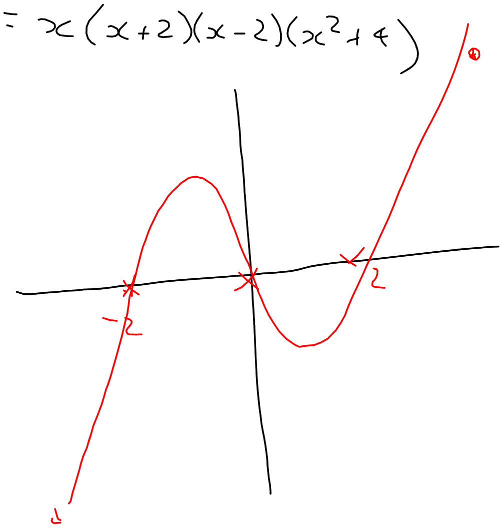
5f)

$f(x) = x^5 - 16x$

$= x(x^4 - 16)$

$= x(x^2+4)(x^2-4)$

$= x(x+2)(x-2)(x^2+4)$



10) $h(x) = f(x) \times g(x)$

(i) both even

$h(-x) = f(-x) \times g(-x)$

$= f(x) \times g(x)$

$= h(x)$

$\therefore$ even

(ii) both odd

$h(-x) = -f(x) \times -g(x)$

$= f(x) \times g(x)$

$\therefore$ even

(iii) one even, one odd

$h(-x) = f(x) \times -g(x)$

$= -f(x) \times g(x)$

$= -h(x)$

$\therefore$ odd

10b) $h(x) = f(x) + g(x)$

(i) both even

$f(-x) = f(x)$

$g(-x) = g(x)$

$$h(-x) = f(-x) + g(-x)$$
$$= f(x) + g(x)$$
$$= h(x) \therefore \text{even}$$

(ii) both odd

$f(-x) = -f(x)$

$g(-x) = -g(x)$

$$h(-x) = f(-x) + g(-x)$$
$$= -f(x) - g(x)$$
$$= -h(x) \therefore \underline{\text{odd}}$$

(iii) one odd, one even

odd $f(-x) = -f(x)$

even $g(-x) = g(x)$

$$h(-x) = f(-x) + g(-x)$$

$$= -f(x) + g(x)$$

<u>neither</u>