Example set 1.2.5

(a) $f(x) = x^5 + x$

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

$\qquad = (-1)^5 x^5 + (-x)$

$\qquad = -x^5 - x$

$\qquad = -(x^5 + x)$

$\therefore f(-x) = -f(x)$

So, $f(x)$ is an odd function.

(b) $g(x) = 1 - x^4$

$g(-x) = 1 - (-x)^4$

$\qquad = 1 - (-1)^4 x^4$

$\qquad = 1 - x^4$

$\therefore g(-x) = g(x)$

So, $g(x)$ is an even function.

(c) $h(-x) = 2x - x^2$

$h(-x) = 2(-x) - (-x)^2$

$= -2x - (-1)^2 x^2$

$= -2x - x^2$

$\therefore h(-x) = -(2x + x^2)$

So, $h(x)$ is nither even nor odd function.