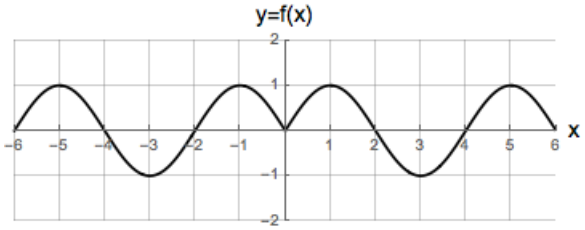
6. [10 points] Consider the functions $f(x)$, $h(x)$ and $q(x)$

x	-3	-2	-1	0	1	2	3
$q(x)$	15	10	5	10	15	10	5

$$h(x) = \frac{-x}{1+x^2}.$$



a. [2 points] Suppose that one of the functions above is a periodic function whose period is an integer less than six. Find the periodic function and determine its period.

Solution: The function $q(x)$ is periodic with period 4.

b. [2 points] Which of the functions above are odd? Circle all that apply.

Solution:

$q(x)$ $\boxed{h(x)}$ $f(x)$ NONE

c. [2 points] Which of the functions above are even? Circle all that apply.

$q(x)$ $h(x)$ $\boxed{f(x)}$ NONE

Solution:

d. [4 points] Consider an even function $y = p(x)$ that has range $[-2, 2]$ and the function $g(x) = 5p(-2x) + 1$.

Solution:

i) What is the range of $g(x)$? Write your answer using inequalities or interval notation.

Range of $g(x)$: $[-9, 11]$

ii) Is $g(x)$ even, odd or neither? Circle your answer.

$\boxed{\text{EVEN}}$ ODD NEITHER