Determine if the given function is even, odd or neither.

33. $f(x) = 3x^4 - 2x^2$

34. $f(x) = x^3 + x$

Solution:

$f(x)$ is even if the following equation holds for all x in the domain

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

For the odd function:

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

33.   For function $f(x) = 3x^4 - 2x^2$ we have

$$f(-x) = 3(-x)^4 - 2(-x)^2 = 3x^4 - 2x^2 = f(x)$$

So this function is even

Answer: function $f(x) = 3x^4 - 2x^2$ is **even**

34.   For function $f(x) = x^3 + x$ we have

$$f(-x) = (-x)^3 + (-x) = -x^3 - x = -(x^3 + x) = -f(x)$$

So this function is odd

Answer: function $f(x) = x^3 + x$ is **odd**