Vertical transformations

Describe the transformation from the parent function

$y = \cos x + 3$

$y = \sin x + \frac{1}{4}$

$y = \cos x - 2$

$y = 4 + \cos x$

$y = A\sin\omega x + B$

$y = A\cos\omega x + B$

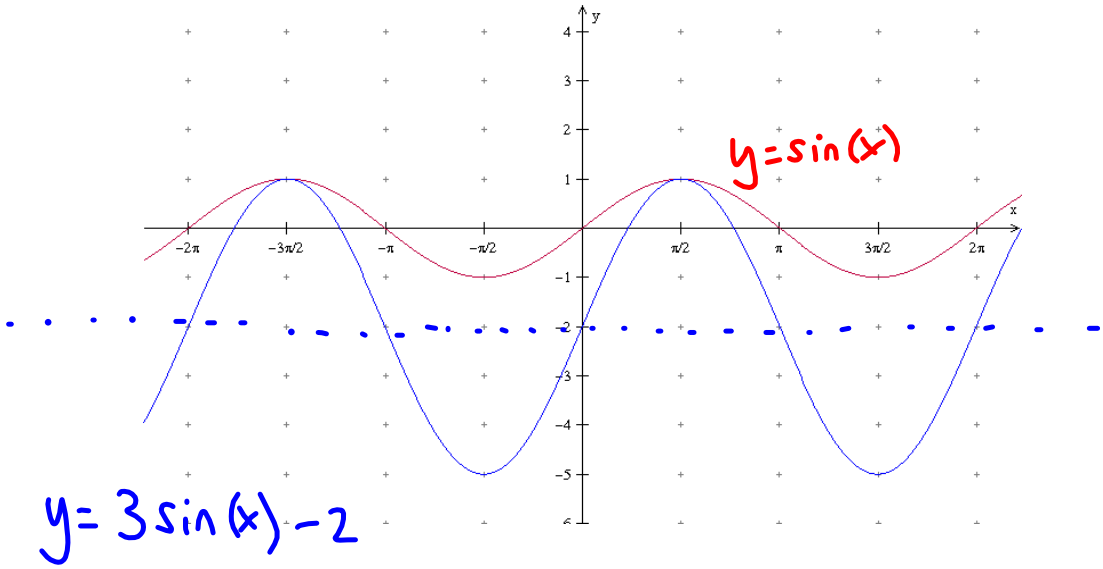
B- shifts graph up or down (follow the sign)

What happens to the average value?

We can write the MIDLINE EQUATION - the horizontal line that is the average value (so y = ...) $y = B$

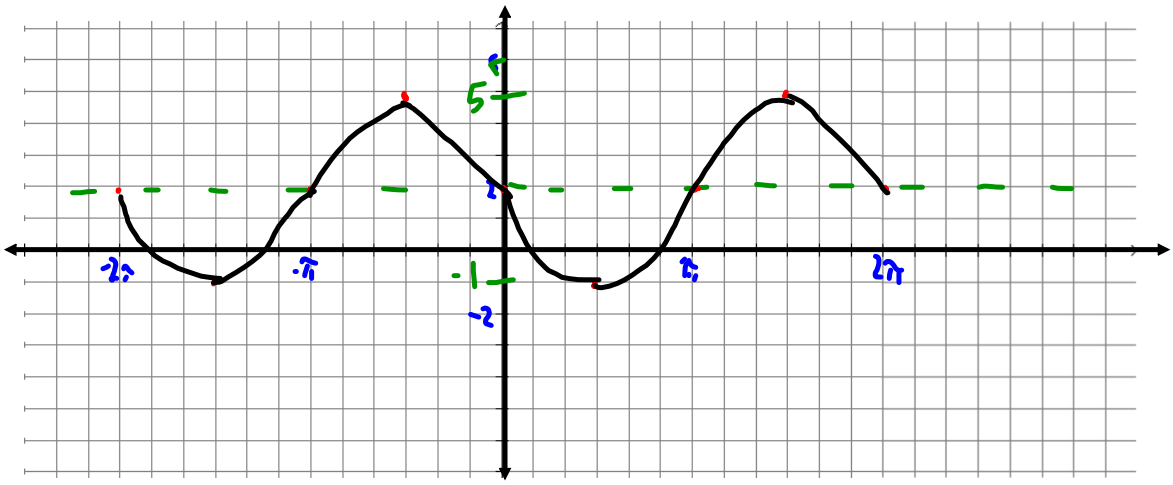
Why is the midline equation helpful??

Describe the transformation of the blue graph from the parent red graph



Graph $y = -3\sin x + 2$

amplitude: 3
period: 2π
vertical shift: up 2
midline equation: $y=2$



Graph $y = 4\cos(2x) - 3$

$T = \frac{2\pi}{w} = \frac{2\pi}{2} = \pi$

amplitude: 4
period: π
vertical shift: Down 3
midline equation: $y = -3$