**2**. [5 points] Let
$$B(w) = w + e^{3w}.$$

Use the limit definition of the derivative to write an explicit expression for $B'(-1)$. *Your answer should not involve the letter B. Do not attempt to evaluate or simplify the limit.*
Draw a box around your final answer.

Answer: $B'(-1) =$ $$\lim_{h \to 0} \frac{\left((-1+h) + e^{3(-1+h)}\right) - \left(-1 + e^{3(-1)}\right)}{h}$$

3. [4 points] A ride at an amusement park straps riders into a seat that travels vertically up and down a tower. The park has added a camera to a nearby building to take pictures of riders when the seat is at the same height as the camera. The graph of the sinusoidal function $h(t)$ below gives the height of the seat t seconds after the ride begins. The scale and units of the vertical axis are unknown, but the park has determined that the first time the seat is at the same height as the camera is when t is exactly 1.95 seconds.

Find the **exact** values of the next two times t when the seat is at the same height as the camera. You do not need to show work, but limited partial credit may be awarded for work shown. Make sure it is clear what your final answers are.

$y = h(t)$
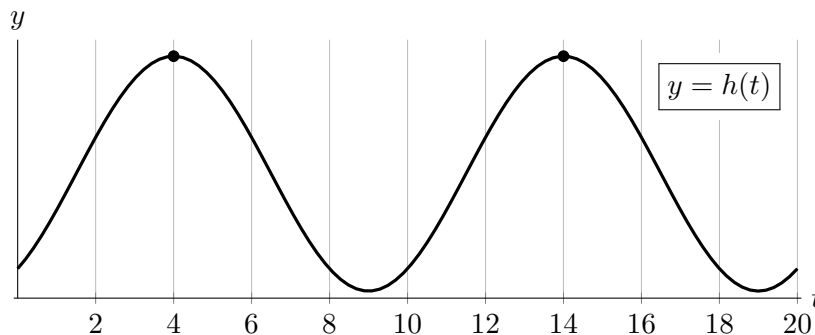
Solution: Maxima at $t = 4$ and $t = 14$, so the period is 10 seconds.
Time from camera height to maximum height $= 4 - 1.95 = 2.05$ seconds.
Time from maximum height to next camera height $= 2.05$ seconds, so next time at camera height is $4 + 2.05 = 6.05$ seconds. The second time is one full period after the original.

Answer: $t =$ **6.05**

Answer: $t =$ **11.95**