9. [17 points]

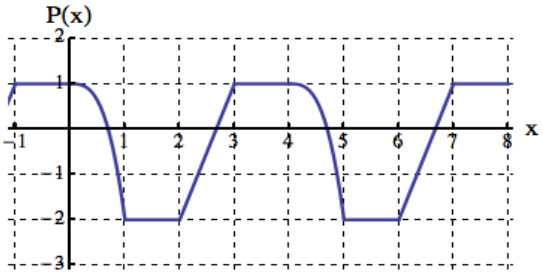
a. [2 points] Suppose the point $(2, 1)$ is in the graph of $y = V(x)$. What point is in the graph of $H(x) = 9V(x - 5)$?

Point: (,)

b. [4 points] Suppose that $Q(x)$ has a vertical asymptote at $x = -5$ and a horizontal asymptote at $y = 2$. Find the equation(s) of the vertical and horizontal asymptotes of the function $K(x) = 3 - Q(2x - 1)$.

Vertical asymptote: _____ Horizontal asymptote: _____

c. [6 points] The graph of a periodic function $y = P(x)$ is shown below



Consider the periodic function $Q(x) = 4P(\frac{1}{2}x - 1) + 5$. Find the period, the amplitude and the midline of the functions $y = P(x)$ and $y = Q(x)$.

i) Period of $P(x)$: _____ Period of $Q(x)$: _____.

ii) Midline of $P(x)$: _____ Midline of $Q(x)$: _____.

iii) Amplitude of $P(x)$: _____ Amplitude of $Q(x)$: _____.

d. [5 points] The graph of $y = L(w)$ can be obtained from the graph of $y = e^w$ by doing the following transformations in the given order:

1. Vertical compression by a factor of $\frac{1}{3}$.
2. Horizontal stretch by a factor of 2.
3. Reflection across the y-axis.
4. Horizontal shift to the right by 5.
5. Vertical shift down by 4.

Find a formula for $L(w) =$ _____