2. [10 points] Let $R(x)$ be a polynomial whose first and second derivatives are given below.

$$R'(x) = (x-1)^7(x+2)^4 \qquad \text{and} \qquad R''(x) = (11x+10)(x-1)^6(x+2)^3$$

a. [6 points] Find the x-coordinates of the inflection points of $R(x)$. Use calculus to find and justify your answers, and show enough evidence to demonstrate that you have found them all. Write NONE if the function $R(x)$ has no points of inflection.

Inflection points of $R(x)$ are at $x =$ _____

b. [4 points] Find the quadratic approximation $G(x)$ of $R(x)$ at the point $(-1, 5)$ on the graph of $R(x)$. Show all your work.
(Recall that a formula for the quadratic approximation $Q(x)$ of a function $f(x)$ at $x = a$ is $Q(x) = f(a) + f'(a)(x-a) + \frac{f''(a)}{2}(x-a)^2$.)

$G(x) =$ _____