1. This exercise will be using the function \( f(x) = \sin^2(3x - 5) \) on the interval \([-1, 1]\). For each of the following questions give either exact solutions or approximate solutions to at least 7 decimal places.

(a) Find all of the points on the interval \([-1, 1]\] where the derivative of this function is 0.
\[
\text{Solution: } x = -0.9513272113, -0.4277284357, 0.09587033987, 0.6194691155
\]

(b) Find all of the points on the interval \([-1, 1]\] where the derivative of this function is \( \frac{1}{2} \).
\[
\text{Solution: } x = -0.9792352245, -0.3998204225, 0.06796232667, 0.6473771287
\]

(c) Find the equation of the tangent line to this curve at the first positive point where \( f'(x) = \frac{1}{2} \).
\[
\text{Solution: } y = 0.5x + 0.9590254854
\]

2. This exercise will be using the function \( g(x) = x^4 - 7x^3 + 3x^2 + 5x - 2 \). For each of the following questions give either exact solutions or approximate solutions to at least 7 decimal places.

(a) Find the intervals where the derivative of \( g(x) \) is positive.
\[
\text{Solution: } (-0.3569810783, 0.7159146599) \cup (4.891066418, \infty)
\]

(b) Find the intervals where the derivative of \( g(x) \) is negative.
\[
\text{Solution: } (-\infty, -0.3569810783) \cup (0.7159146599, 4.891066418)
\]

(c) Find the points where \( g(x) = g'(x) \).
\[
\text{Solution: } x = -0.4711991510, 0.6701869944, 2.754954250, 8.046057906
\]

(d) Graph the function and its derivative on the same plot and draw the graph below.
\[
\text{Solution: }
\]