1. Where on the graph of $g(x) = x^2 - \dfrac{54}{x}$ is the tangent line horizontal?

2. Where on the graph of $g(x) = x^3 - 3x^2 + 3x + 2$ is the tangent line parallel to the line $y = 3x - 2$?

3. Differentiate the following functions:

   (a) $\qquad f(x) = \sqrt[3]{x^2}(x^2 + 3x - 2)$

   (b) $\qquad g(x) = \dfrac{x^3 + \frac{2}{x}}{5\sqrt{x}}$

   (c) $\qquad h(x) = \dfrac{\sqrt{3}}{5 - \sqrt{2}} \cdot \sqrt{x}$

   (d) $\qquad k(x) = \sqrt[5]{3x^2}$