1. Find all values of $x$ in $[0, 2\pi]$ at which the tangent line to $y = 2\sin x - x$ is horizontal.

2. Find $\frac{dy}{dx}$ if A) $y = -\frac{1}{3}(x^7 + 2x - 9)$ B) $y = x^{-3} + \frac{1}{x^7}$ C) $y = \sin x \cos x$ D) $y = \frac{\sec x}{1+\tan x}$.

3. Let $h(\pi) = 10$, $h'(\pi) = -1$, $g(\pi) = -3$, and $g'(\pi) = 2$. Find $f'(\pi)$ if A) $f(x) = x(h(x) + g(x))$ B) $f(x) = \frac{h(x)}{4+g(x)}$.

4. Find $\frac{d^2y}{dx^2}$ where A) $y = x^5 - 5x^3 + 2x$ B) $y = x \cos x$.

5. Find $f'(x)$ if $f(x)$ is given by A) $\sqrt{3x^3 - 7x + 10}$ B) $x^2 \sin(1/x)$ C) $3 \tan^2(e^x)$ D) $\ln(\ln x)$ E) $e^{x \cos x}$.

6. Find $\frac{dy}{dx}$ if $x \sec y = x^2$.

7. Find an equation of the tangent line to the curve $2x^2 = y^3 + y$ at the point $(-1, 1)$.

8. Find $y''$ if $y' = \frac{4x}{3y^3+1}$. Express your answer in terms of $x$ and $y$.

9. Consider the relation $x^2 = \frac{y-1}{y+1}$.
   A) Use implicit differentiation to compute $\frac{dy}{dx}$ at the point $(2, -\frac{5}{3})$.
   B) Solve for $y$ explicitly in terms of $x$.
   C) Use part B to find $y'(2)$.