Second Assignment, MT231P Integration

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Due: 09-03-2023 10:00am

1. Find an equation of the tangent line for the graph of following functions
   - $f(x) = \dfrac{8}{\sqrt{x-2}}$ at $x = 6$,
   - $g(x) = 4 + \cot x - 2\csc x$ at $x = \frac{\pi}{2}$.
2. Find $\frac{dy}{dx}$ for the following functions by stating how you do substitutions
   - $y = e^{2\cos(\pi x - 1)}$,
   - $y = (x^{-3/4} + x\sin x)^{4/3}$.
3. Find $\frac{d^2y}{dx^2}$ for $y^2 = e^{x^2} + 2x$.
4. Identify the extreme points of the function $f(x) = \frac{x^4}{4} - 2x^2 + 4$, find where the curve is increasing and decreasing, and sketch a rough graph for $f(x)$.