Show all work, clearly and legibly, to receive full credit. Correct spelling, organization of your solution, and proper use of mathematical notation all count. You may use a calculator, but no notes, books, or other resources. Good luck!

1.) (4 pts.) Find a solution of the DE \( y' = 2e^x - 2^x + 2 \).

\[
y = 2e^x - \frac{1}{\ln 2} \cdot 2^x + 2x + C
\]

2.) (4 pts.) Let \( f(x) = x - \cos x \). Where is \( f \) concave down?

\[
f'(x) = 1 + \sin x
\]
\[
f''(x) = \cos x
\]

\( f \) is concave down when \( \cos x < 0 \)

when \( \cos x < 0 \)

\[
(0, \frac{\pi}{2}) \cup \left( \frac{3\pi}{2}, \frac{5\pi}{2} \right) \cup \ldots \]

and the same intervals with negative values at end points

3.) (2 pts.) What is the circumference of the unit circle?

\( 2\pi \)