Read each problem **very carefully** before starting to solve it and do only what is asked. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points] Express all functions **exclusively in terms of sine and cosine** and simplify:

$$\frac{\tan\theta}{\cot\theta} - \sec^2\theta =$$

2. [4 points] Find the midline, amplitude, period and phase shift and graph in a single period $f(x) = 5\cos\left(2x - \frac{2\pi}{3}\right)$. (Show **all your steps!**)

3. [4 points] The graph of $y = f(x)$ is shown below. Write an equation for $f(x)$. Please **show carefully all steps** used to identify the required parameters A, B, C and D.