Instructions. Show all work, with clear logical steps. No work or hard-to-follow work will lose points.

Problem 1. (4 points each) Determine whether the following series converge or diverge. State why or why not. If the series converges, compute the sum.

(a) $\displaystyle\sum_{n=0}^{\infty} \left(\frac{3}{2}\right)^n$ (b) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{2^{n+1}}$

Problem 2. (2 points) Sketch a graph of any two of the following functions.

1. $y = \sec x,\ 0 \le x \le 2\pi$
2. $y = -x^3 + 8$
3. $y = \sqrt{4 - x^2}$
4. $y = 4 \ln x$

Recall. If $|r| < 1$, then

$$\sum_{n=0}^{\infty} ar^n = \frac{a}{1-r}.$$