From Friday:

Do the following series converge or diverge?

1. $\sum_{k=1}^{\infty} \frac{2k^2 - 3}{5k^2 + 6k}$

2. $\sum_{k=98}^{\infty} \frac{3^k + \sin(k)}{\cos(k) + 5}$

3. $\sum_{k=2}^{\infty} \frac{5^k - 6k - 27}{7^k + 14k^2 + k}$

Do the following series converge or diverge?

1. $\sum_{k=2}^{\infty} \frac{1}{k^2}$

   Hint: Draw a picture comparing with $\int_1^{\infty} \frac{1}{x^2}\, dx$.

2. $\sum_{k=1}^{\infty} \frac{1}{k}$

   Hint: Draw a picture comparing with $\int_1^{\infty} \frac{1}{x}\, dx$.