Name: _____

1. Use partial fractions to find a formula for the nth partial sum of
   $$\sum_{k=1}^{n} \frac{2}{k(k+2)} \quad \text{and then take the limit to find} \quad \sum_{k=1}^{\infty} \frac{2}{k(k+2)}$$

2. Why do we know that $\displaystyle\sum_{k=1}^{\infty} \frac{1}{\sqrt{k}}$ diverges?

3. What would you compare to terms of
   $$\sum_{k=1}^{\infty} \frac{k-1}{k^3 + k} \quad \text{to to show that it converges?}$$