Extra Examples, 11.2

1. Does the series converge or diverge?

   (a) $\sum \dfrac{k(k+2)}{(k+3)^2}$

   (b) $\displaystyle\sum_{n=1}^{\infty} \frac{5}{n^2}$

   (c) $\displaystyle\sum_{n=2}^{\infty} \frac{1+3^n}{5^n}$

2. **What's wrong?**

$$\begin{aligned} 0 &= 0+0+0+0+\cdots \\ &= (1-1)+(1-1)+(1-1)+\cdots \\ &= 1-1+1-1+1-1+\cdots \\ &= 1+(-1+1)+(-1+1)+(-1+1)+\cdots \\ &= 1+0+0+0+0+\cdots \end{aligned}$$

Therefore, $0 = 1$.