

Cross your t 's and avert your i 's

1. Evaluate each of the following limits. What do they all have in common?

(a) $\lim_{t \rightarrow \infty} \int_{-t}^t \frac{2x}{1+x^2} dx$

(b) $\lim_{t \rightarrow \infty} \int_{-t}^{2t} \frac{2x}{1+x^2} dx$

(c) $\lim_{t \rightarrow \infty} \int_{-t}^{t^2} \frac{2x}{1+x^2} dx$

2. Evaluate $\int_{-\infty}^{\infty} \frac{2x}{1+x^2} dx$. Compare your results to Problem 1.