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 **$t$ -distribution**

1. Suppose  $X_1, \dots, X_5 \stackrel{\text{iid}}{\sim} N(0, 1)$ . Find the value  $c$  such that  $\frac{c(X_1 + X_2)}{\sqrt{X_3^2 + X_4^2 + X_5^2}}$  has a  $t$  distribution. What specific  $t$  distribution does this random variable have?