Quiz **Name**

1. Let $n \geq 2$ be a positive integer. Use integration by parts with $u = \cosh^{n-2} z$ and $dv = \cosh z \, dz$ (along with the equalities $\cosh^2 z - \sinh^2 z = 1$ and $\frac{d}{dz} \cosh z = \sinh z$) to derive the formula

$$\int \cosh^n z \, dz = \tfrac{1}{n} \cosh^{n-1} \sinh z + \tfrac{n-1}{n} \int \cosh^{n-2} z \, dz.$$

2. Make use of the formula of Problem 1 to compute $\int (1 + x^2)^{\frac{3}{2}} \, dx$.