$$\int_2^5 (x+1)^2 \, dx, \quad let \ u = x+1, \ \therefore \ dx = du$$

Method 1 - Transform Limits	Method 2 - Re-substitute
Substitute $x=2$ and $x=5$ into u equation	Drop the limits of integration
$u = 2+1 = 3 \quad u = 5+1 = 6$	$\therefore \int (x+1)^2 dx = \int u^2 \, du$
$\therefore \int_2^5 (x+1)^2 dx = \int_3^6 u^2 \, du$	$= \left[\frac{1}{3} u^3\right]$
$= \left[\frac{1}{3} u^3\right]_3^6$	Resubstitute the u-equation and evaluate with original x limits
$= \left[\frac{1}{3} 6^3 - \frac{1}{3} 3^3\right]$	$= \left[\frac{1}{3}(x+1)^2\right]_2^5$
$= 72 - 9$	$= \left[\frac{1}{3} 6^3 - \frac{1}{3} 3^3\right]$
$= 63$	$= 72 - 9$
	$= 63$