

<b>13</b>	<b>5</b>	Which integral is obtained when the substitution $u = 1 + 2x$ is applied to $\int x\sqrt{1+2x} \, dx$ ?	<b>1</b>
		(A) $\frac{1}{4} \int (u-1)\sqrt{u} \, du$ (B) $\frac{1}{2} \int (u-1)\sqrt{u} \, du$ (C) $\int (u-1)\sqrt{u} \, du$ (D) $2 \int (u-1)\sqrt{u} \, du$	

**A**State Mean:  
**0.67**

$$u = 1 + 2x$$

$$2x = u - 1$$

$$x = \frac{u-1}{2}$$

$$\frac{dx}{du} = \frac{1}{2}$$

$$dx = \frac{du}{2}$$

$$\begin{aligned} \therefore \int x\sqrt{1+2x} \, dx &= \int \frac{u-1}{2} \sqrt{u} \frac{du}{2} \\ &= \frac{1}{4} \int (u-1)\sqrt{u} \, du \end{aligned}$$

\* These solutions have been provided by [projectmaths](http://projectmaths.com.au) and are not supplied or endorsed by the Board of Studies