Mixed Exercise 6.01 Projectiless (Year 2 Applied Maths)

| <u> </u> | A particle is projected from a point A with a speed of $m{u}$ at an angle of elevation $m{	heta}$ above the horizontal | | | | |
|-----------|------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| | and moves freely under gravity. When it has moved a horizontal distance of x , its vertical height above | | | | |
| | the point of projection is y. | | | | |
| om | Show that $y = x \tan \theta - \frac{gx^2}{2u^2}(1 + \tan^2 \theta)$ | | | | |
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| The particle moves fr | from a point A with spec | | |
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| | e for which the particle | is 18 m or more ahove 4 | |
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| (3) | A particle P is projected from a point A with position 25 j m with respect to a fixed origin 0. |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | The velocity of projection is $(6ui + 4uj)$ ms ⁻¹ . The particle moves freely under gravity, passing |
| | through a point B, which has position vector $(\lambda i + 15j)$ m, where λ is a constant, before reaching |
| | the point C on the $x-axis$, as shown in the diagram. The particle takes 5 s to move from A to B. |
| | Find: (a) the value of u (b) the value of λ |
| mo: | |
| www.formular1maths.com | (c) the angle the velocity of P makes with the x – axis as it reaches C. $y_{\uparrow} \qquad \qquad$ |
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