



Name: _____

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Quiz 2
(version A)

(Marks)

Cal I (S) (Maths 201–NYA)

- (2) 1. Stephanie is sitting on the ground 10 feet from the spot where a hot air balloon is about to land. She is watching the balloon as it travels at a steady rate of 20 feet per second towards the ground. If θ is the angle between the ground and her line of sight to the balloon, at what rate is the angle θ changing at the instant the balloon hits the ground?
- (2) 2. Sand is poured onto a conical pile with the height of the pile always equalling its diameter. If the sand is poured at the constant rate of $5 \text{ m}^3/\text{s}$, at what rate is the height of the pile changing when the height is 2 meters? [Remember $V = \frac{1}{3}\pi r^2 h$]
- (2) 3. A spotlight on the ground shines on a [very tall vertical] wall 12 metres away. A man 2 metres tall walks directly from the spotlight towards the wall at a constant speed of 1.6 metres per second. His shadow on the wall shrinks as he walks towards it. How fast is his shadow shrinking at the instant he is 4 metres from the wall?