

King Fahd University of Petroleum and Minerals  
Mathematical Sciences

## Quiz #3

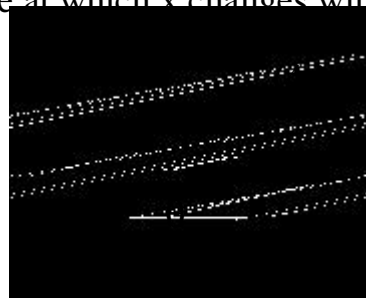
**St. ID:** \_\_\_\_\_ **St. Name:** \_\_\_\_\_ **Section #:** \_\_\_\_\_ **Serial #:** \_\_\_\_\_

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**Q1.** Find  $f'(\theta)$  where  $f(\theta) = \sin^2(2\theta^2 - \theta)^3$  (3 Marks)

**Q2.** Find  $\frac{d}{dt} \left[ \tan \left( x^2 \sqrt{y} \right) \right]$  in terms of  $x$ ,  $y$ ,  $\frac{dx}{dt}$  and  $\frac{dy}{dt}$  assuming that  $x$  and  $y$  are differentiable functions of  $t$ . (3 Marks)

**Q3.** A 12 foot long ladder leans against a wall at an angle  $\theta$  with the ground. The top of the ladder is  $x$  feet above the ground. If the bottom of the ladder is pushed toward the wall, find the rate at which  $x$  changes with  $\theta$  when  $\theta = 60^\circ$



(ks)