SUMMARY OF CALCULUS 2.



7. *The distance, x of an object from O* at t secs is given by : $x = t^2 - 2t + 4$ (a) how far from O is it at t = 0 sec? x = 4 metres (b) how far from O is it at t = 5 sec? x = 25 - 10 + 4 = 19 metres $v = 4t^3 - 8t m/s$ (c) find the velocity equation v = dx = 2t - 2 $x = t^4 - 4t^2 + c$ dt *sub* t = 2, x = 10(d) find the velocity at t = 0 sec 10 = 16 - 16 + cv = -2 m/s*So* c = 10 $So x = t^4 - 4t^2 + 10$ (e) find the velocity at t = 5 sec v = 8 m/s*function* y = f(x)*(f) find the acceleration equation* a = dv = 2 m/s/sv′ dt 8. A gun is fired so that the bullet goes vertically upwards. The height of the bullet at t sec is $H = 80t - 5t^2 + 2$ (a) how high was the gun as the bullet was fired? Draw the function: When t = 0, H = 2 metres (b) find the velocity equation. v = 80 - 10t(c) find the time when the velocity of the bullet was zero. 80 - 10t = 0 so t = 8 sec (d) find the greatest height reached by the bullet. $H = 80 \times 8 - 5 \times 8^{2} + 2 = 322$ metres (e) what was the initial velocity of the *bullet?* t = 0 so v = 80 m/sec

(f) how far did the bullet travel in the 4^{th} second? (from t = 3 to t = 4). *When* t = 3, H = 197 m*When* t = 4. H = 242 m*So dist* = 242 - 197 = 45 *metres*

9. The velocity of an object is given by Find the distance equation given that at t = 2 sec the distance x = 10 m

10. This is the gradient graph of a

