ANTIDIFFERENTIATION PROBLEMS.

1. Find the equation of the curve which passes through the point (2, 9) and whose gradient is

$\frac{dy}{dx} = 2x - 5$

2. Find the equation of the curve $y = f(x)$ if the gradient is

$y' = 6x^2 + 8x - 7$ and when $x = 1, y = 5$

3. Find the equation of the curve $y = f(x)$ if the gradient is $f'(x) = x^4$ and $f(1) = 0$.

(ie when $x = 1, y = 0$)

4. Find the equation of the curve whose gradient function is $\frac{dy}{dx} = x - x^2$

and when $x = 1, y = 1$

5(a) If the distance of a car from O is
$x = 6t^2 + 2t + 1$
find the velocity equation

ie $v = \frac{dx}{dt} =$

and find the acceleration equation.

ie $\frac{dv}{dt} =$

(b) The acceleration of a car is
$\frac{dv}{dt} = 6t + 1$

(i) Find the Velocity equation given that when $t = 0$ then $v = 4$ m/s

(ii) Find the displacement equation (ie distance equ) given that when $t = 0$ then the distance from O is $x = 2$ m

6. $f'(x) = 6x - 12x^2$ and the curve passes through the point (2, 4).
Find the equation of the curve $y = f(x)$

7. Find the antiderivatives.

(a) $\frac{dy}{dx} = 4x^3 - 7x$

(b) $\frac{dy}{dx} = \frac{3x}{2} + \frac{5x^2}{4}$

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8.(a) The acceleration of an object moving in a line is $a = 6t - 4$
At $t = 0$, the object is at O moving with a velocity of $v = 1\ ms^{-1}$
Find the velocity equation at time t sec

(b) Find at what times the velocity becomes zero.