

Assignment: Finding equation of curve.

Date _____

1) A gradient function is given by $\frac{dy}{dx} = 10e^{2x} - 5$. When $x = 0$, $y = 8$. Find the value of y when $x = 1$.

2) The graph of the function $y = f(x)$ passes through the point $(3, 4)$. The gradient function of f is given as $f'(x) = \sin(x - 3)$. Find $f(x)$.

3) The velocity v metre per second of a moving body at time t seconds is given by $v = 50 - 10t$. The initial displacement s is 40 metres. Find an expression for s in terms of t .

4) The velocity v of a particle at time t is given by $v = e^{-2t} + 12t$. The displacement of the particle at time t is s . Given that $s = 2$ when $t = 0$, express s in terms of t .

5) Let $f'(x) = 12x^2 - 2$. Given that $f(-1) = 1$, find $f(x)$.

6) It is given that $\frac{dy}{dx} = x^3 + 2x - 1$ and that $y = 13$ when $x = 2$. Find y in terms of x .

7) A curve with equation $y = f(x)$ passes through the point $(1, 1)$. Its gradient function is $f'(x) = -2x + 3$. Find the equation of the curve.

8) The acceleration, $a \text{ m s}^{-2}$, of a particle at time t seconds is given by

$$a = \frac{1}{t} + 3\sin 2t, \text{ for } t \geq 1.$$

The particle is at rest when $t = 1$.

Find the velocity of the particle when $t = 5$.

Answers to Assignment: Find equation of curve.

1) $34.9(5e^2 - 2)$

2) $\cos(x-3)+4$

3) $s = 50t - 5t^2 + 40$

4) $s = -0.5 e^{-2t} + 6t^2 + 2.5$

5) $f(x) = 4x^3 - 2x + 3$

6) $y = \frac{x^4}{4} + x^2 - x - 7$

7) $f(x) = -x^2 + 3x - 1$

8) 2.24

