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*19/eng03/019*

*Civil engineering*

*No 188*

Mat 104

Solutions to the questions;

1. dy/dt = t3-t2/2-2t+4

= 3t2-2t/2-2

= 3t2-t-2

Stationary point = dy/dt = 0

Using quadratic equation;

= 3t2 – t – 2

= (t-2) (t+1)

t-2 = 0 t+1 = 0

t = 2 t = -1

When t=2;

23 – 22/2 – 2(2) + 4

8 – 2 – 4 + 4 = 6

When t = -1;

-13 + 12/2 + 2(1) + 4

= -1 + 0.5 + 2 + 4 = 5.5

Stationary points at (2, 6) and (-1, 5.5)

1. find dy/dx = 2y2 – 5x4 – 2- 7y3 = 0

d/dy(2y2) – d/dy(5x4) – d/dy(2) – d/dy(7y3) = 0

dy/dx(4y) – 20x3 – dy/dx(21y2)

dy/dx (4y – 21y2) = 20x3

dy/dx = 20x3/ 4y – 21y2

1. find dy/dx if 4x2 + 2xy2 – 5y2 = 0

using product rule Udv/dx + Vdu/dx

8x + 2x2y dy/dx + 2y2 – d/dx(10y)

dy/dx = -8x-2y2 / 2x2y – 10y

when x=1, y=2

-8(1)- 2(2)2 / 2(1)\*2(2) – 10(2) = -16/-12 = 16/12.