25th July
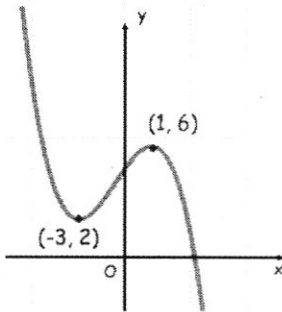
Shown below is the graph of $y = f(x)$

The point $(-3, 2)$ is a minimum point and the point $(1, 6)$ is a maximum point.

Write down the range of values of x for which $f(x)$ is a decreasing function.

$x < -3, \quad x > 1$.

Solve the simultaneous equations

$$x + y + z = 1 \qquad (1)$$

$$4x - 3y + 4z = 32 \quad (2)$$

$$x - 10y - 2z = 27 \quad (3)$$

$(1) \times 4 - (2) \qquad 7y = -28 \Rightarrow \underline{y = -4}$

$(1) \times 2 + (3)$: $\quad 3x - 8y = 29$

$\qquad \Rightarrow 3x = -3 \Rightarrow \underline{x = -1}$

$\qquad -5 + z = 1 \Rightarrow \underline{z = 6}$

Solve $2sin^2\theta + 3cos\theta = 3$

for $0° < \theta < 360°$

$2(1 - \cos^2\theta) + 3\cos\theta = 3$

$2 - 2\cos^2\theta + 3\cos\theta = 3$

$0 = 2\cos^2\theta - 3\cos\theta + 1$

$0 = (2\cos\theta - 1)(\cos\theta - 1)$

$\cos\theta = \frac{1}{2}, \quad \cos\theta = 1$

$0° < \theta < 360° \Rightarrow \theta = 60°, 300°$