SKILLS CHECK

QUESTION 1

Calculate the finite area enclosed by the graph of y = x(x – 4) and the x- axis

QUESTION 2

Prove that $(\cos x - \sin x)^2 + (\sin x + \cos x)^2 = 2$

QUESTION 3

Express 2log x + 0.5log y – 3 log z as a single logarithm

QUESTION 4

The graph of $y = x^2 - \frac{1}{3}x^3 + ax$ passes through (3,24). Find the x- coordinates of the stationary points

QUESTION 5

Find the coefficient of the x^5 term in the expansion of $\left(3 + \frac{1}{3}x\right)^9$

SKILLS CHECK

QUESTION 1

Calculate the finite are enclosed by the graph of $y = 16 + 6x - x^2$ and the x-axis

QUESTION 2

Solve $cos^2\theta - sin^2\theta = -0.5$ for $0° < \theta < 360°$

QUESTION 3

Simplify $2 \ln e^{-x} + \ln e^{x} - \frac{1}{2}\ln e^{4x}$

QUESTION 4

Given that $y = x^3 - 5x^2 + kx$ has a stationary point where $x = 2$, find the value of the y coordinate at the stationary point

QUESTION 5

Find the coefficient of the x^4 term in the expansion of $(x - 1)(1 + 2x)^7$

SKILLS CHECK

QUESTION 1

Sketch the graph of y = x(x - 1)(x - 3). Calculate the total area bounded by the graph of y and the x axis between x = 0 and x = 3

QUESTION 2

Solve $3tan\theta sin\theta = cos\theta$ for $0° < \theta < 360°$

QUESTION 3

Solve ln x = ln (x + 4) - ln(x + 1)

QUESTION 4

Given that $y = 2\sqrt{x} - ax + 10$ passes through the point (1,6) find the x-coordinate of the stationary point

QUESTION 5

Find the coefficient of the x^5 term in the expansion of $\left(\frac{1}{3} - 3x\right)^{10}$

WEEK 3

SKILLS CHECK

QUESTION 1

Find $\int_4^9 3x + 4\sqrt{x} + 2\ dx$

QUESTION 2

Show that $tan\theta + \frac{1}{tan\theta} = \frac{1}{sin\theta cos\theta}$

QUESTION 3

Solve $3^{3x-1} = ½$ giving your answer correct to 3 significant figures

QUESTION 4

Find the equation of the normal to the curve $y = 8x^4 - 3$ at the point where $x = -½$

QUESTION 5

Find the coefficient of the x^4 term in the expansion of $(x^2 - 1)(2 - 3x)^5$

SKILLS CHECK

QUESTION 1

Find $\int_1^9 1 + 2x + \sqrt{x}\, dx$

QUESTION 2

Solve $\frac{4cos\theta - 1}{tan\theta} = 2sin\theta$ $\quad 0^o < \theta < 360^o$

QUESTION 3

Express $\log_a 1 + \frac{1}{2}\log_a 36 + 3\log_a 4 - 2\log_a 2$ as a single logarithm

QUESTION 4

Find the equation of the normal to the curve $y = 10\sqrt{x} - 10$ at the point where x = 4

QUESTION 5

Find the coefficient of the x^6 term in the expansion of $\left(\frac{1}{2} + 2x\right)^{12}$

WEEK 5

SKILLS CHECK

QUESTION 1

Evaluate $\int_{-3}^{0}(2x+3)^2 dx$

QUESTION 2

Solve $5sin\theta = 1 + 2cos^2\theta$ $\quad 0^o < \theta < 360^o$

QUESTION 3

Solve $4e^{2x} = 9$ expressing your answer in the form ln p where p is a rational number

QUESTION 4

Find the equation of the tangent to the curve $y = x^2\sqrt{x}$ at the point where x = 4

QUESTION 5

Find the coefficient of the x^5 term in the expansion of $(x^2 - 2)(2 - 2x)^6$

SKILLS CHECK

QUESTION 1

Calculate the area enclosed by the parabolas $y = 10x - 2x^2$ and $y = 5x - x^2$

QUESTION 2

Solve $\sin(3x - 60^o) = 0.5$ for $0^o \leq x \leq 360^o$

QUESTION 3

$R = 600\, e^{-0.5t}$ Find the value of t when R = 180 giving your answer to 3 significant figures.

QUESTION 4

Find the x coordinates of the stationary points of the curve
$y = x^5 - 60x^3$

QUESTION 5

Find the coefficient of the x^5 term in the expansion of $\left(3 - \frac{1}{3}x\right)^{11}$