HIGHER QUICKIES 3

If $2x^2 - 12x + 11$ is expressed in the form $2(x - b)^2 + c$, what is the value of c?

The curve $y = f(x)$ is such that $\frac{dy}{dx} = 3x^2 + 9x + 1$ and the curve passes through the origin.

What is the equation of the curve?

For what value of k does the equation $x^2 - 3x + k = 0$ have equal roots?

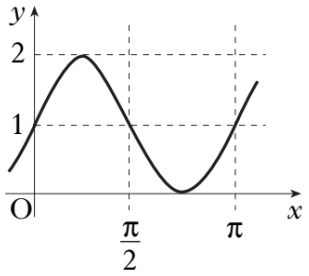
The point P(–1, 2) lies on the circle with equation $x^2 + y^2 - 6x - 8y + 5 = 0$.

What is the gradient of the tangent at P?

What is the value of $\int_0^{\frac{\pi}{6}} 4\cos 2x\,dx$?

The graph shown in the diagram has equation of the form $y = \sin(px) + q$.

What are the values of p and q?



If $\log_3 t = 2 + \log_3 5$, what is the value of t?

If $3^k = e^4$, find an expression for k.

What is the integral of $(2x + 3)(2x - 5)$ with respect to x?

SOLUTIONS			
1. -7	2. $y = x^3 + \frac{9}{2}x^2 + x$	3. K = $\frac{9}{4}$	4.m = -2
5. $\sqrt{3}$	6. p = 2 q = 1	7. t = 45	8. k = $\frac{4}{\ln 3}$
9. $\frac{4}{3}x^3 - 2x^2 - 15x + C$			