Higher Maths question bank :: Paper 1

11. Evaluating integrals

1. Derivative $\frac{dy}{dx} = 12x^2 - 2x + 5$, and $y = 5$ when $x = 1$.
   Express y in terms of x.

2. Second derivative $v''(t) = 6x + 1$, and $v'(0) = 3$ and $v(2) = 14$.
   Find the equation of function $v(t)$.

3. Evaluate integral $\int_{-1}^{1} (3x + 1)^2 \, dx$.

4. Derivative $p'(a) = 3(7a^2 - 1)$, and $p(-1) = 0$.
   Find the equation of function $p(a)$.

5. Evaluate integral $\int_{-2}^{1} \left(1 - \frac{1}{2}t\right)^{-2} dt$.