Higher Maths question bank :: Paper 1

08. Finding and evaluating derivatives

1. Function g is defined by $g(x) = \sqrt{x^3} - 2x^2$, where $x \geq 0$.
   Evaluate $g'(4)$.

2. A curve is given by $y = (2x + 2)^3$, where $x \in \mathbb{R}$.
   Find the gradient of the tangent to the curve when $x = 3$.

3. Function h is defined by $h(x) = 2(x^3 + 2x)^2 + 5x$, where $x \in \mathbb{R}$.
   Express $h'(x)$ in terms of x.

4. Curve $y = 5(x^2 + 2)^4$, where $x \in \mathbb{R}$. Differentiate y with respect to x.

5. Function k is defined by $k(x) = \sqrt{x^2 + 1}$, where $x \in \mathbb{R}$.
   Express $k'(x)$ in terms of x.

6. Curve $y = (2 - 7t)^{-1}$, where $t \neq \frac{2}{7}$. Differentiate y with respect to t.