

Tutorial # 2 MATH1004

1. Find derivative of $f(x) = \sqrt{x}$ at $x = 2$ by definition.
2. Find derivative of $f(x) = x|x|$ at $x = 0$ by definition.
3. Find $y'(1)$ if $y(x) = \frac{x^2-x+3}{\sqrt{x}}$.
4. Let $y = t^3$ and $t = \sqrt{u} + 6$. Find $\frac{dy}{du}$ when $u = 9$.
5. Find equation of the tangent line to $x^2 + 2x + y^2 - 4y - 24 = 0$ at $(4,0)$.
6. Find derivative of $\frac{2x+3}{\sin x^2}$.
7. Let $g(x) = x^2 + x$, $-\frac{1}{2} < x < \infty$, find $\frac{d}{dx}g^{-1}(x)$.