

**Advanced Higher Maths**  
**SQA 2016 Paper**  
**Question 1**



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(a) Differentiate  $y = x \tan^{-1} 2x$ . 3

(b) Given  $f(x) = \frac{1-x^2}{1+4x^2}$ , find  $f'(x)$ , simplifying your answer. 3

(c) A curve is given by the parametric equations

$$x = 6t \text{ and } y = 1 - \cos t.$$

Find  $\frac{dy}{dx}$  in terms of  $t$ . 2

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Answers:

(a)  $\tan^{-1} 2x + \frac{2x}{1+4x^2}$

(b)  $-\frac{10x}{(1+4x^2)^2}$

(c)  $\frac{1}{6} \sin t$