

## Higher Differentiation 1

### Official Homework 4

Q1. Differentiate the following functions  $f(x)$ :

(a)  $x^4 - 2x^3 + 4x^2 + x + 1$       (b)  $(x - 2)(x + 6)$       (c)  $\frac{1}{3x^5}$       (6)

Q2. Evaluate the derivative for the following functions:

(a)  $\frac{4}{3\sqrt{x^2}}$       (b)  $\frac{\sqrt{x}-2}{x^3}$       (c)  $\frac{1}{\sqrt{x}} + 2^5\sqrt{x}$       (7)

Q3. Find the rate of change of the function  $f(x) = \frac{-3}{x^2}$  at  $x = 2$ .      (3)

Q4. For the function  $f(x) = x^3 + 2x + 1$  find the equation of the tangent at  $x = -1$ .      (4)

**Total 20 marks**



#### Hints

1. Revise rules for Surds and Indices
2. Look out for **keywords**
3. **CLEAR** working
4. Check ! does your answer make sense
5. Double check before handing in

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Complete your corrections for each question below:

Q1.

Q2.

Q3.

Q4.

Q5.

Q6.