

Differentiation 2

1. Use differentiation from first principles to find the gradient of each of the following functions at the given points.
 - (a) $y = x^2 - 2x$ at the point (4, 8)
 - (b) $y = 3x^2 - 4$ at the point (1, -1)
 - (c) $y = x^2 + 2x - 3$ at the point (-2, -3)
 - (d) $y = 2x^2 + 3x + 1$ at the point (0, 1)
 - (e) $y = -x^2 + 2x + 2$ at the point (-3, -13)
 - (f) $y = x^3 + 2x - 3$ at the point (2, 9)

2. From the first principles, find the derivative at a general point on each of the following graphs.
 - (a) $y = x^2 - 4$
 - (b) $y = x^2 + 2x - 7$
 - (c) $y = x^3$
 - (d) $y = 2x^4$
 - (e) $y = 3x^2 + 6x$