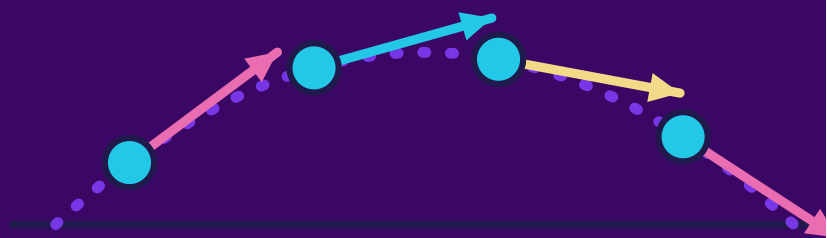


Calculus



Derivative of x^n **B** $f(x) = x^n \Rightarrow f'(x) = nx^{n-1}$

Constant multiples, sums $f(x) = ax^n + bx^m \Rightarrow f'(x) = anx^{n-1} + bmx^{m-1}$

Gradient of tangent at $x = a$ $f'(a)$; tangent $y - f(a) = f'(a)(x - a)$

Gradient of normal $-\frac{1}{f'(a)}$

Increasing / decreasing $f'(x) > 0$; $f'(x) < 0$

Stationary points; optimisation $f'(x) = 0$; check the sign of f' either side

Integral of x^n , $n \neq -1$ **B** $\int x^n dx = \frac{x^{n+1}}{n+1} + C$

Area, $y \geq 0$ **B** $A = \int_a^b y dx$

B given in the exam. Learn the rest.