

11

$$\int_1^2 6x^2 dx = \left[6 \frac{x^3}{3} \right]_1^2 = \left[2x^3 \right]_1^2 = 2 \cdot 2^3 - 2 \cdot 1^3 = 2 \cdot 8 - 2 = \underline{\underline{14}}$$

12

$$f(x) = x^3 - 3x^2$$

Derivatans nollställen?

$$f'(x) = 3x^2 - 6x = 3x(x-2)$$

$$f'(x) = 0 \text{ ger } 3x(x-2) = 0$$

$$x = 0 \text{ eller } x = 2$$

Teckentabell

x		0		2	
y'	+	0	-	0	+
y	↗		↘		↗
		MAX		MIN	

$$f'(-1) = 3 \cdot (-1) \cdot (-1-2) = 9 > 0$$

$$f'(1) = 3 \cdot 1 \cdot (1-2) = -3 < 0$$

$$f'(4) = 3 \cdot 4 \cdot (4-2) = 24 > 0$$

Extremvärden

$$f(0) = 0^3 - 3 \cdot 0^2 = 0$$

$$f(2) = 2^3 - 3 \cdot 2^2 = 8 - 3 \cdot 4 = -4$$

Svar: Maximipunkt (0,0), minimipunkt (2,-4)