

Pencils and Erasers Only – No Calculators Needed.

1 Compute and simplify the derivatives of the following:

(a)  $f(x) = \sqrt{x^3 - 12x}$

(b)  $f(x) = \ln(x^3 - 12x)$

2 Find  $f'(x)$  and  $f''(x)$  if  $f(x) = (x + 3)e^{2x}$ . It's easier if you simplify as you go.

3 Sketch a bit of the graph of a function  $G$  for an interval in which  $G'(x) < 0$  and  $G''(x) > 0$ .