

**Question 2 ( 2 marks)**

Solve  $\log_e(x) - 3 = \log_e(\sqrt{x})$  for  $x$ , where  $x > 0$ .

**Question 3 ( 3 marks )**

Let  $f: (3, \infty) \rightarrow \mathbb{R}$  where  $f(x) = \log_e\left(\frac{x-3}{2}\right) + 5$ .

a. Find  $f^{-1}(x)$ .

b. Find  $g(f(x))$ , where  $g(x) = f^{-1}(x)$ . (2 marks )

**Question 5** (7 marks)

Consider the function  $f: [-1, 3] \rightarrow \mathbb{R}$ ,  $f(x) = 3x^2 - x^3$ .

- a. Find the coordinates of the stationary points of the function.

2 marks

---



---



---



---



---



---

- b. On the axes below, sketch the graph of  $f$ .

Label any end points with their coordinates.

2 marks

