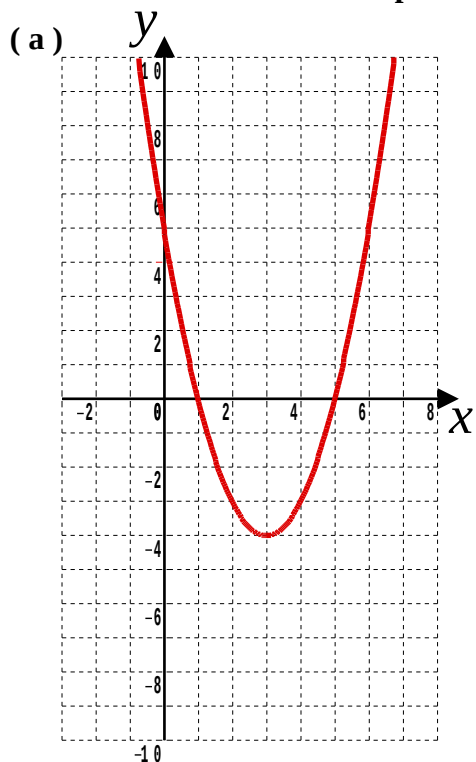


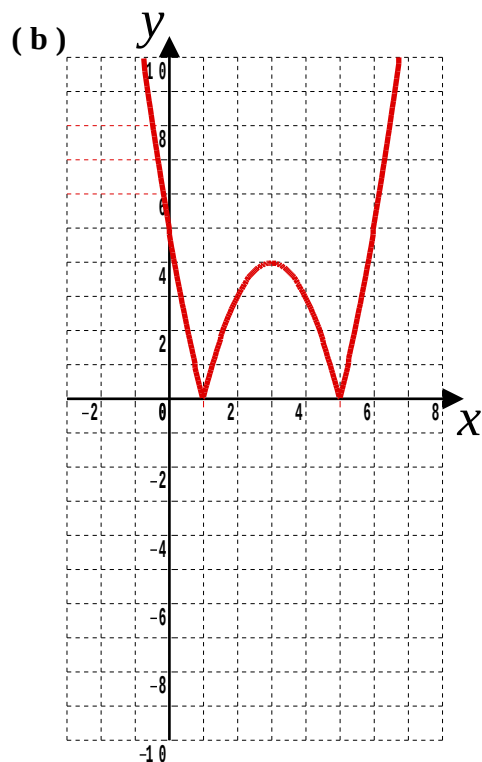
## 5.5 Answers

### A-Level Pure Mathematics, Year 2 Functions II

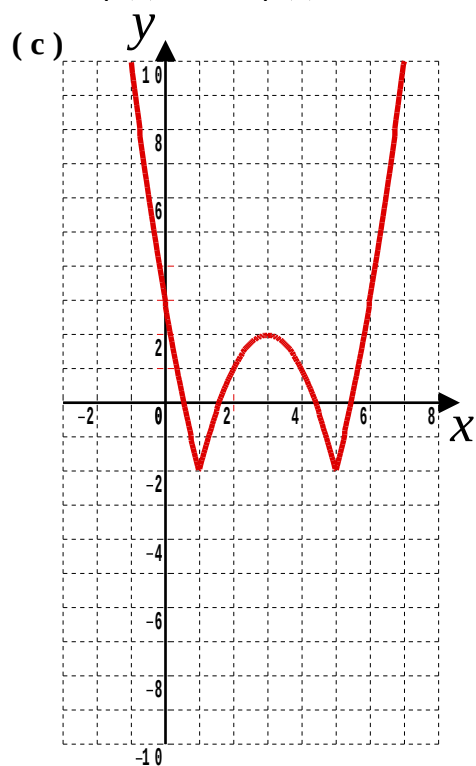
#### 5.5.1 Solution to the 5.3 Example



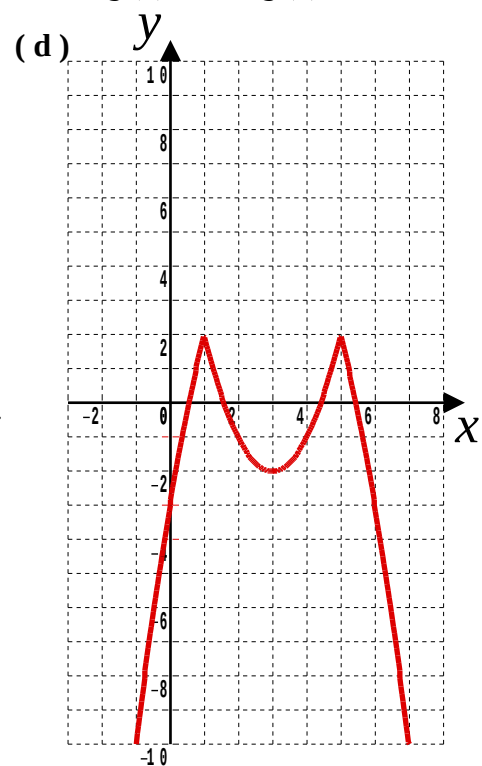
$$f(x) \in \mathbb{R}, f(x) \geq -4$$



$$g(x) \in \mathbb{R}, g(x) \geq 0$$



$$h(x) \in \mathbb{R}, h(x) \geq -2$$



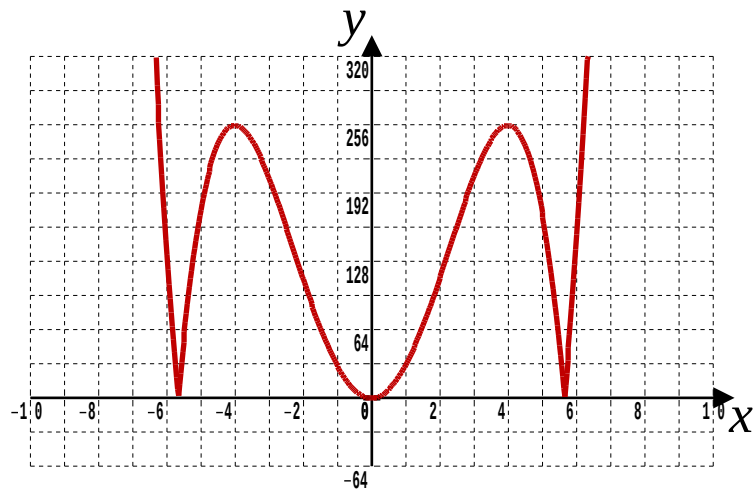
$$k(x) \in \mathbb{R}, k(x) \leq 2$$

[ 3, 3, 3, 3 marks ]

### 5.5.2 Solution to the 5.4 Exercise

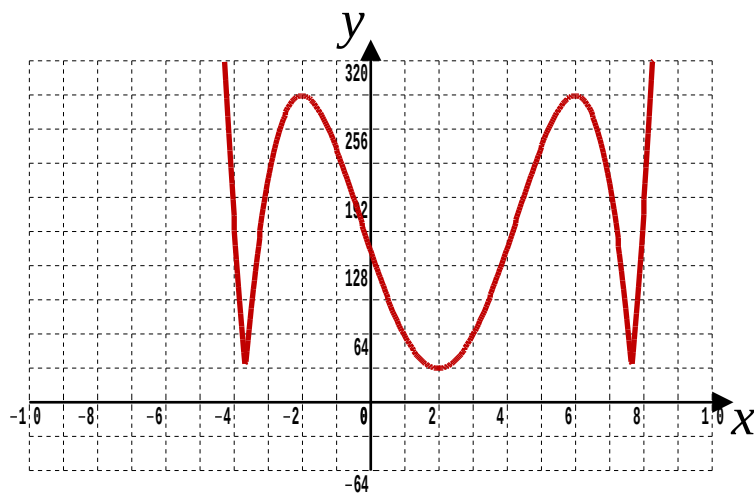
Answer 1

(i)



[ 2 marks ]

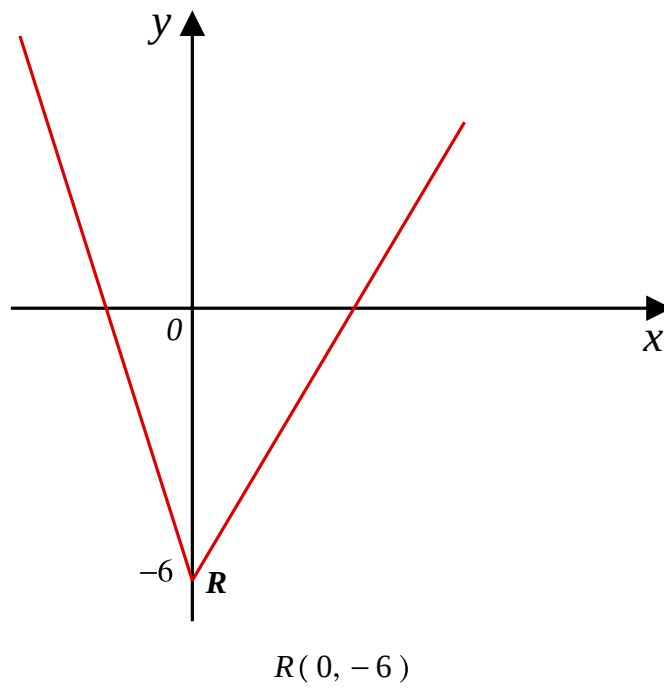
(ii)



[ 3 marks ]

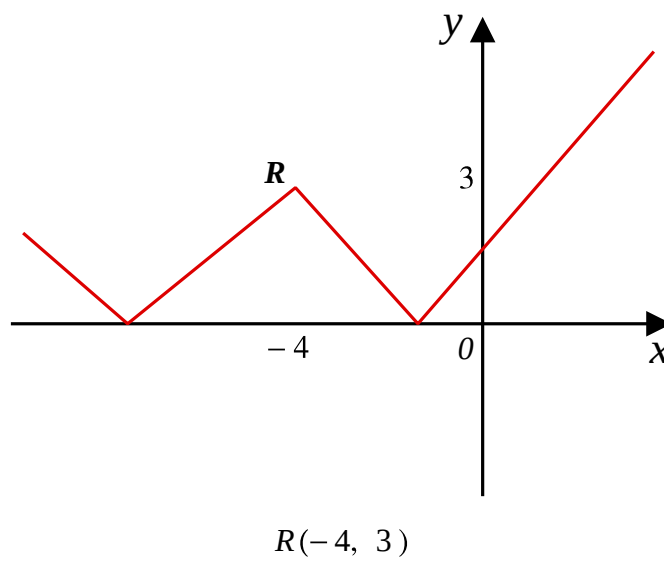
**Answer 2**

**( a )**



**[ 3 marks ]**

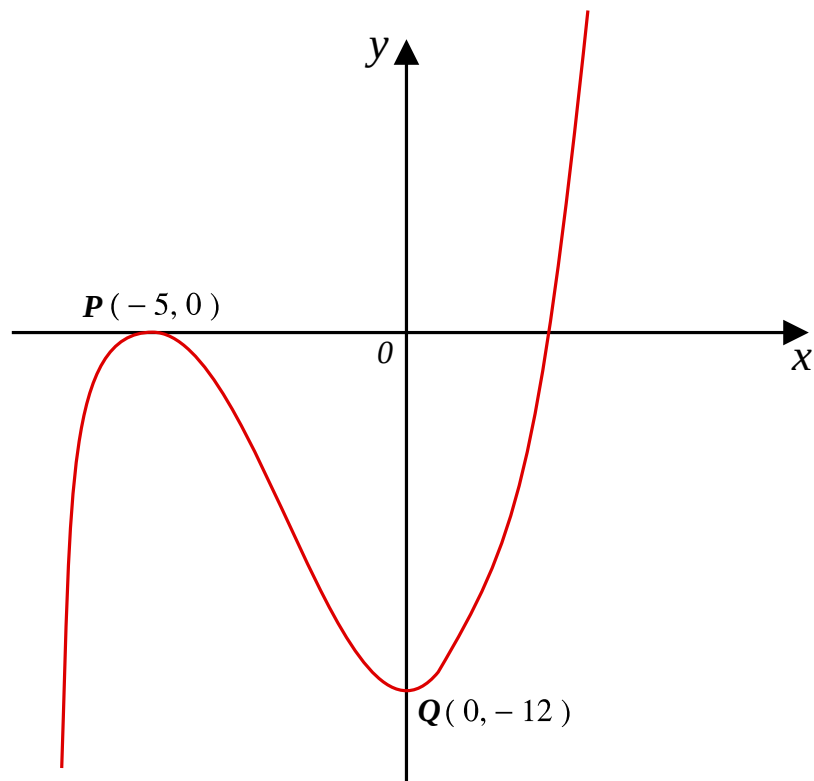
**( b )**



**[ 3 marks ]**

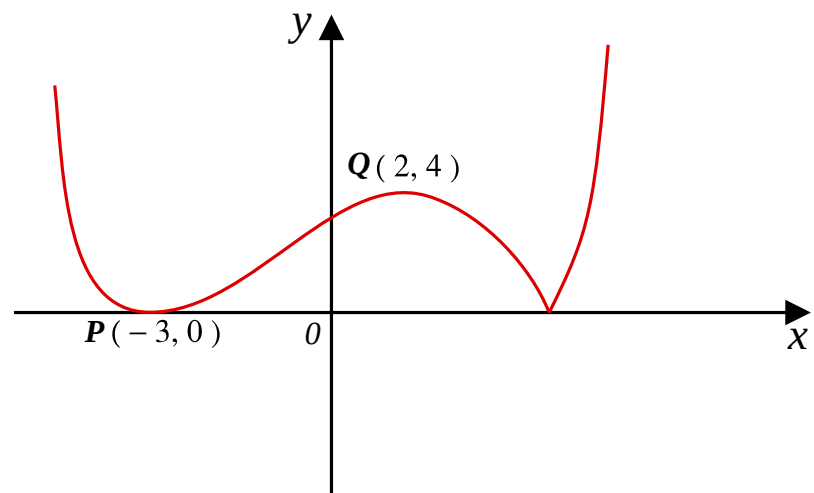
**Answer 3**

**( a )**



**[ 3 marks ]**

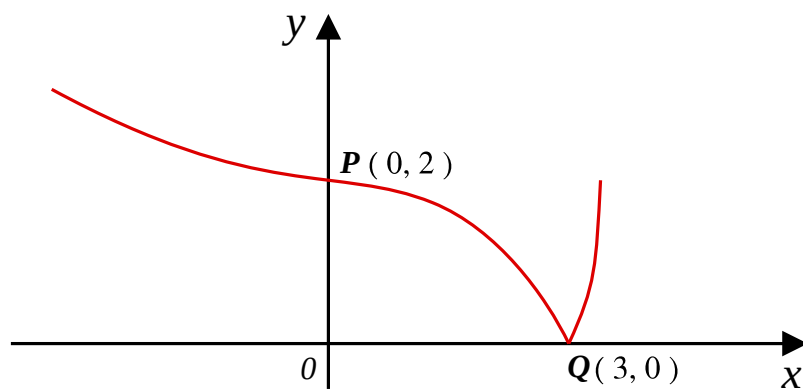
**( b )**



**[ 3 marks ]**

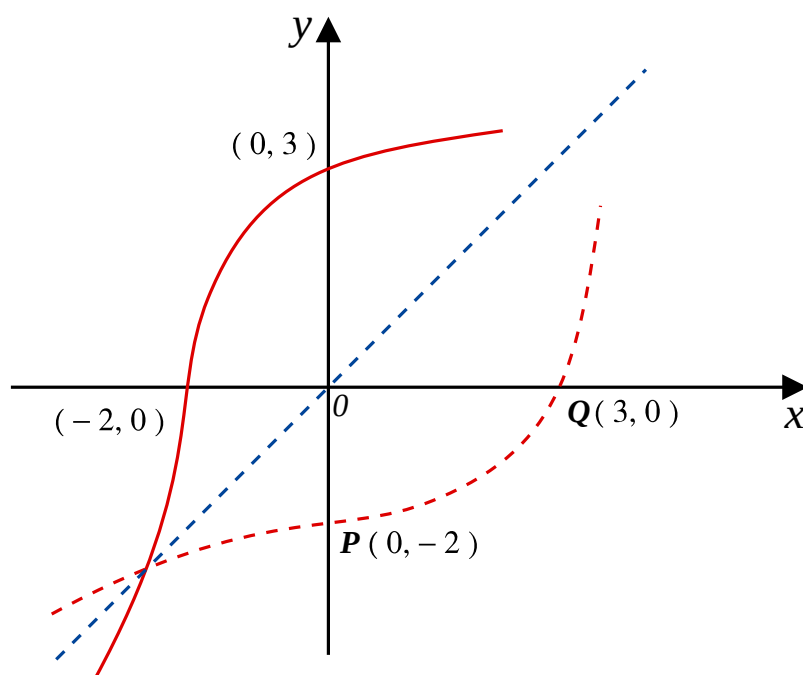
**Answer 4**

**( a )**



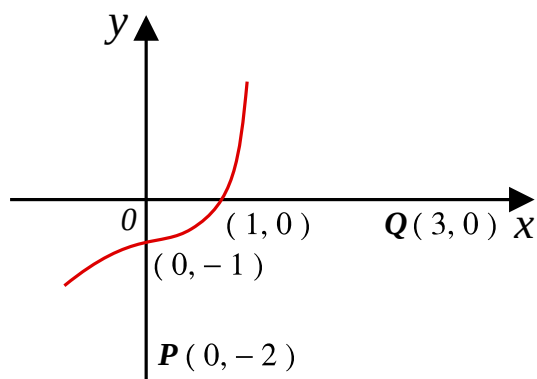
**[ 3 marks ]**

**( b )**



**[ 3 marks ]**

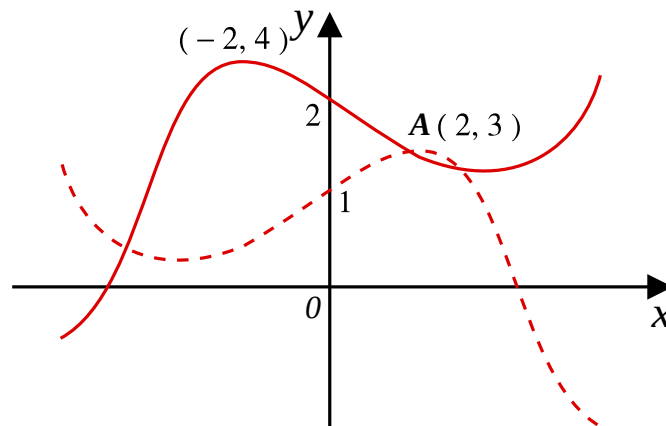
**( c )**



**[ 3 marks ]**

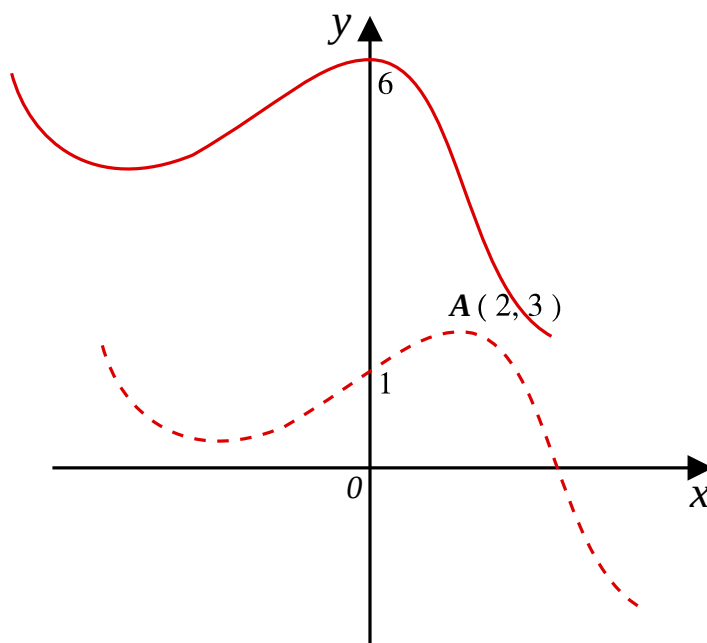
**Answer 5**

**( a )**



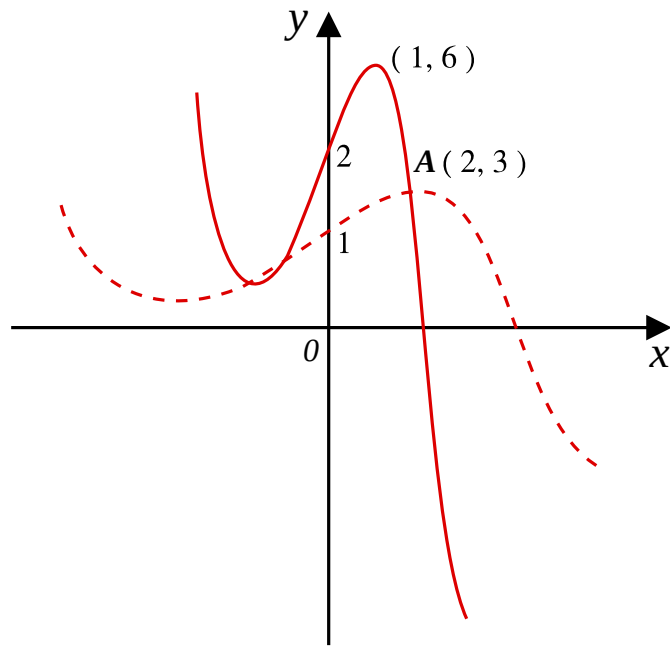
**[ 3 marks ]**

**( b )**



**[ 3 marks ]**

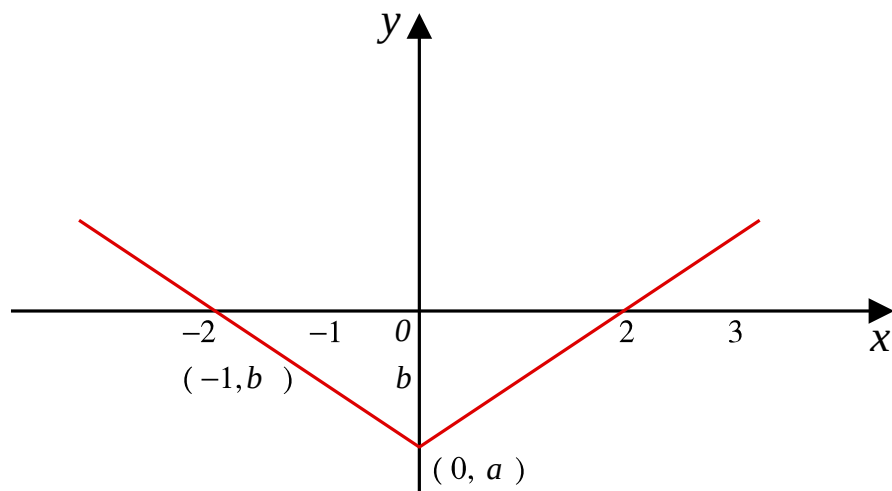
(c)



[ 3 marks ]

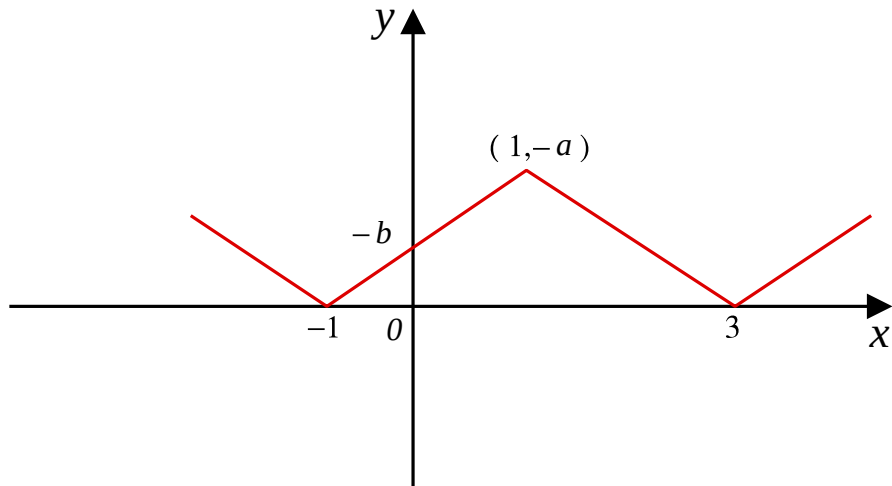
Answer 6

(a)



[ 2 marks ]

(b)



[ 3 marks ]

(c)  $a = -2, b = 1$

[ 2 marks ]

(d)

$$-(x - 1) - 2 = 5x$$

$$-x + 1 - 2 = 5x$$

$$-1 = 6x$$

$$x = -\frac{1}{6}$$

$$+(x - 1) - 2 = 5x$$

$$x - 1 - 2 = 5x$$

$$-3 = 4x$$

$$x = -\frac{3}{4}$$

From the graph, it's obvious that only one of these solutions is going to satisfy the original equation.

By substitution the only answer is,

$$x = -\frac{1}{6}$$

[ 4 marks ]