

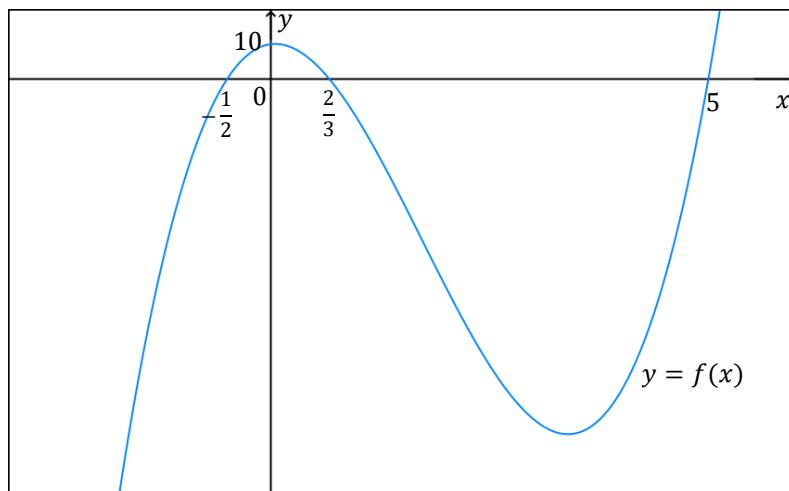
## Pure Mathematics Intermediate Level June 2019 Examination – Answers

1. (a)  $x = \frac{6}{5}$ .

1. (b)  $(1 - 4x)^7 \approx 1 - 28x + 336x^2$ ,  $(0.96)^7 \approx 0.754$ .

2. (b)  $f(x) = (x - 5)(3x - 2)(2x + 1)$ .

2. (c)



2. (d)  $-\frac{1}{2} \leq x \leq \frac{2}{3}$  or  $x \geq 5$ .

3. (a)  $\log\left(\frac{y}{x^2}\right)$ .

3. (b)  $x = 0.737$ .

3. (c)  $x = 5$  or  $x = 6$ .

4. (a) (ii)  $8x^2 + 12x + 1 = 0$ .

4. (b)  $-2 < k < 3$ .

5. (a)  $\frac{7}{x-2} + \frac{5-6x}{x^2+1}$ .

5. (b)  $3 < x \leq 11$ .



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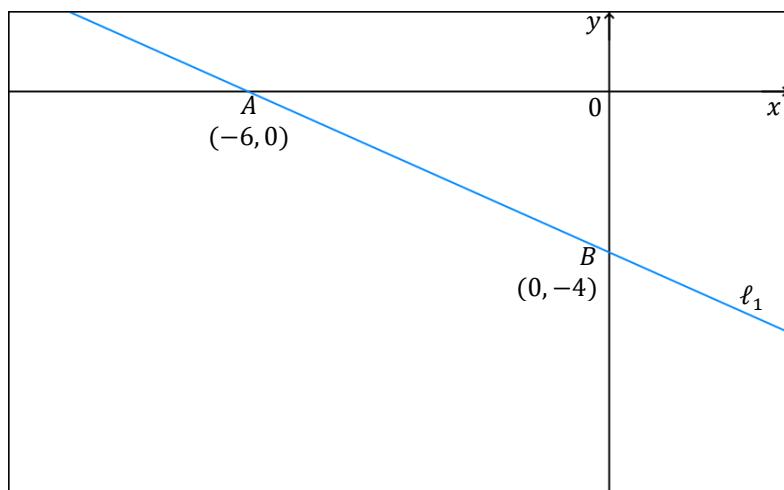
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6. (a)  $A(-6, 0), B(0, -4)$ .



6. (b)  $k = -4$ .

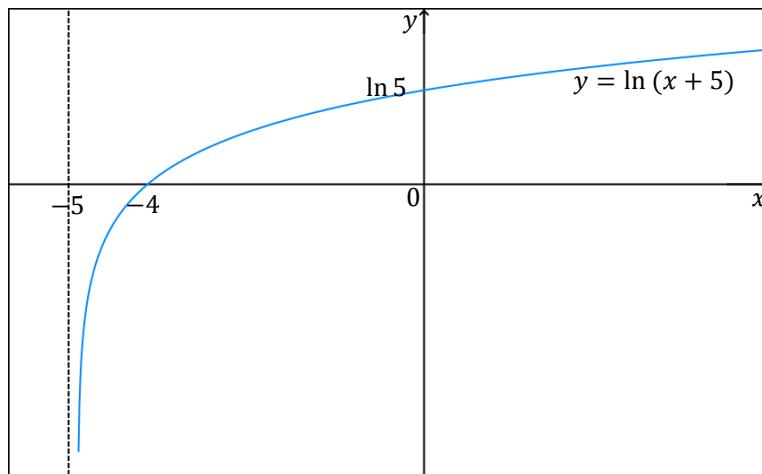
6. (d)  $E(-3, -2)$ .

6. (e)  $\frac{39}{4}$  square units.

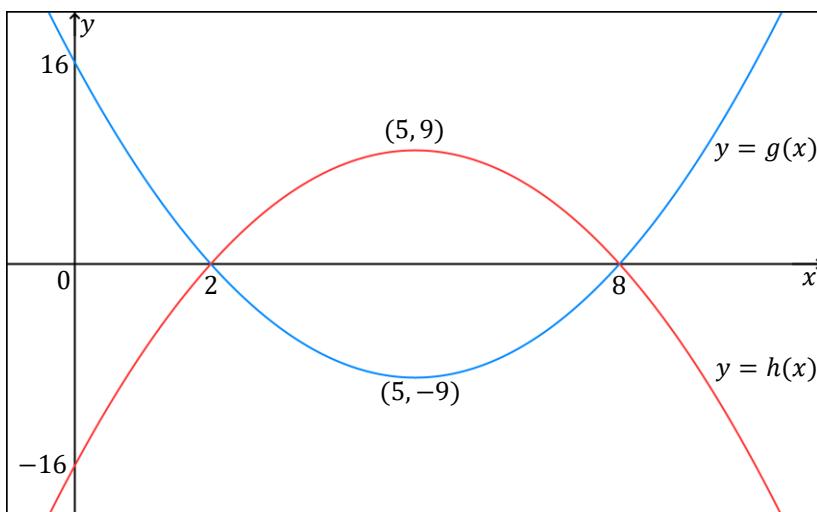
7. (a)  $x = 63.4^\circ, 161.6^\circ, 243.4^\circ, 341.6^\circ$ .

7. (b) (i)  $\cos \theta = -\frac{2\sqrt{2}}{3}, \tan \theta = -\frac{\sqrt{2}}{4}$ .

8. (a) (i)



8. (a) (ii) Domain:  $x \in (-5, \infty)$ . Range:  $x \in \mathbb{R}$ .  
 8. (b) (i) Minimum value of  $g(x)$  is  $-9$ . It occurs at  $x = 5$ .  
 8. (b) (ii)  $x = 2$  or  $x = 8$ .  
 8. (b) (iii)



8. (b) (iv) Range:  $h(x) \in (-\infty, 9]$ .