



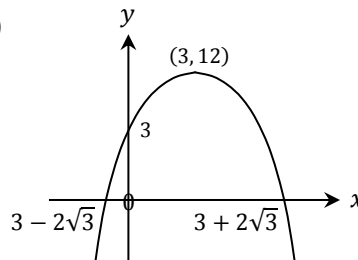
**UNIVERSITY OF MALTA**  
**L-Universitá ta' Malta**  
**Junior College**

**Mathematics Department**  
**Intermediate Pure Mathematics End-of-Year Test**

**June 2017 – Answers**

1. (a)  $-\frac{4}{3}; -\frac{3}{2}$   
(b)  $\frac{9\sqrt{a}-3}{a-1}$   
(c)  $-2; 0$
2. (a)  $1 - 10x + 40x^2 - 80x^3; 0.32$   
(b)  $\frac{1}{3}; \frac{5}{2}$   
(c)  $2.79$

3. (a)  $x^2 - 15x - 216 = 0$   
(b) (i)  $-3; 12$  (iii)



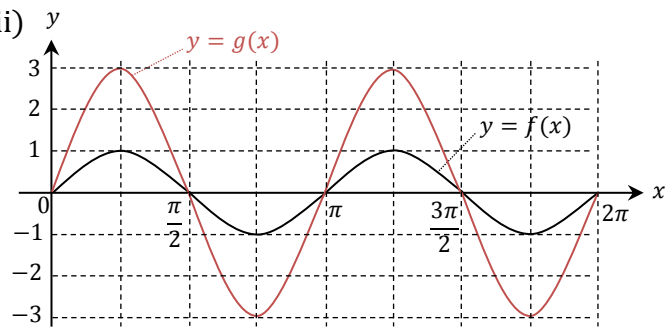
- (iv)  $x \leq 3 - 2\sqrt{3}, x \geq 3 + 2\sqrt{3}$   
(v)  $\text{dom } f: x \in R; \text{range } f: f(x) \in R, f(x) \leq 12$

4. (a)  $4$   
(b)  $-245$   
(c)  $(x - 2)(3x + 2)(2x - 1); 2, -\frac{2}{3}, \frac{1}{2}$
5. (a)  $1, -1, 2$   
(b)  $1 \leq x < 4$
6. (b) (i)  $3$  (ii)  $y = 2x + 1$  (iii)  $(\frac{8}{3}, \frac{19}{3})$

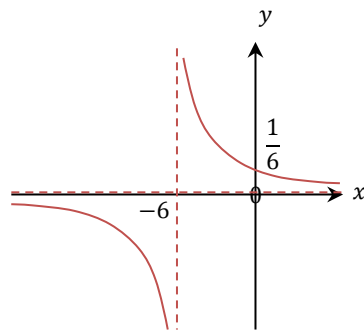
7.

(a)

(i)(ii)



(b)



domain  $h$ :  $x \in \mathbb{R}, x \neq -6$ ; range  $h$ :  $h(x) \in \mathbb{R}, h(x) \neq 0$

8.

(a)

$-150^\circ, -330^\circ$

(b)

(ii)  $61.9^\circ$

(iii)  $120 \text{ cm}^2$

(iv)  $110.2 \text{ cm}^2$ ;  $69.2 \text{ cm}^2$

(v)  $59.4 \text{ cm}^2$