

## Lab quiz 12

1. The area of one petal of  $r(\theta) = \sin(3\theta)$  can be given by:

I.  $\int_0^{\frac{\pi}{6}} (\sin(3\theta))^2 d\theta$

II.  $\int_0^{\frac{\pi}{3}} (\sin(3\theta))^2 d\theta$

III.  $\int_0^{\frac{\pi}{3}} \frac{1}{2} (\sin(3\theta))^2 d\theta$

IV.  $\int_{\frac{\pi}{3}}^{\frac{\pi}{2}} (\sin(3\theta))^2 d\theta$

- (A) I only
- (B) II only
- (C) III only
- (D) I, II and IV only
- (E) I, III and IV only
- (F) I,II,III and IV

2. The area of all petals of  $r(\theta) = \sin(6\theta)$  can be given by

$$\int_0^{\frac{\pi}{3}} 3(\sin(6\theta))^2 d\theta$$

(A) True

(B) False

3. The definite integral(s) which gives the area bounded by the inner loop of  $r(\theta) = 1 - 2\sin\theta$  is (are):

I.  $\int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} \frac{1}{2}(1 - 2\sin\theta)^2 d\theta$

II.  $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} (1 - 2\sin\theta)^2 d\theta$

III.  $\int_{\frac{\pi}{2}}^{\frac{5\pi}{6}} (1 - 2\sin\theta)^2 d\theta$

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I and III only
- (F) I, II and III

4. The definite integrals which gives the area bounded by the inner loop of  $r(\theta) = 1 - 2\cos\theta$  are:

I.  $\int_{\frac{\pi}{3}}^{\frac{5\pi}{3}} \frac{1}{2}(1 - 2\cos\theta)^2 d\theta$

II.  $\int_{\frac{5\pi}{3}}^{\frac{7\pi}{3}} \frac{1}{2}(1 - 2\cos\theta)^2 d\theta$

III.  $\int_0^{\frac{\pi}{3}} (1 - 2\cos\theta)^2 d\theta$

IV.  $\int_{\frac{5\pi}{3}}^{2\pi} (1 - 2\cos\theta)^2 d\theta$

- (A) I and II only
- (B) I and III only
- (C) I, II and III only
- (D) I, III and IV only
- (E) II, III and IV only
- (F) I,II,III and IV

5. The definite integrals which gives the area bounded by the inner loop of  $r(\theta) = 1 + 2\sin\theta$  are:

I.  $\int_{\frac{7\pi}{6}}^{\frac{11\pi}{6}} \frac{1}{2}(1 + 2\sin\theta)^2 d\theta$

II.  $\int_{\frac{7\pi}{6}}^{\frac{3\pi}{2}} (1 + 2\sin\theta)^2 d\theta$

III.  $\int_{\frac{3\pi}{2}}^{\frac{11\pi}{6}} (1 + 2\sin\theta)^2 d\theta$

IV.  $\int_{\frac{5\pi}{6}}^{\frac{11\pi}{6}} \frac{1}{2}(1 + 2\sin\theta)^2 d\theta$

- (A) I and II only
- (B) I and III only
- (C) I, II and III only
- (D) I, III and IV only
- (E) II, III and IV only
- (F) I,II,III and IV