

1. Given that  $f(x) = (x^2 + 3)^2$ , then  $f^{-1}(2)$  equals

- A 49
- B 32
- C 28
- D 7
- E none of these

2. Given that  $f(x) = \cos 2x$ , then  $f^{-1}(x)$  equals

- A  $\sin 2x$
- B  $-\sin 2x$
- C  $2 \sin 2x$
- D  $-2 \sin 2x$
- E  $\frac{1}{2} \sin 2x$

3. P (1, -2, 5), Q (2, -4, 4) and R (-1, 2, 7) are three collinear points.

- A 3:1
- B 2:3
- C 1:3
- D -1:3
- E -3:1

4.  $\log_{\sqrt{3}} 9$  equals

- A  $\frac{1}{4}$
- B  $\frac{1}{2}$
- C 2
- D 3
- E 4

5. Given that  $f(x) = x(2x + 3)$ , then  $f^{-1}(2)$  equals

- A 14
- B 11
- C 4
- D 2
- E none of these

6. The minimum value of  $4 \cos \theta - 3 \sin \theta$ ,  $0 \leq \theta < 2\pi$ , is

- 7.
- A 1
  - B 0
  - C -1
  - D -5
  - E -7

7.  $x * y$  is defined as  $\sqrt{(x^2 + y^2)}$ . For what values of  $x, y, z$  is  $(x * y) * z = x * (y * z)$ ?

- A Only if  $x = y$
- B Only if  $y = z$
- C Only if  $x = y = z$
- D For all  $x, y, z$
- E For no values of  $x, y$  and  $z$

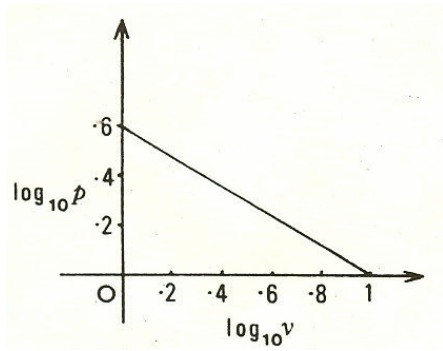
8. If PQ represents  $\begin{pmatrix} 2 \\ -4 \\ 0 \end{pmatrix}$  and P is (0, 2, -2), then R, the mid point of PQ, is

- A (1, -3, -1)
- B (1, -2, 0)
- C (1, -1, -1)
- D (1, 0, -2)
- E none of these

9.

- A  $-2 \sin 2x$
- B  $-\sin 2x$
- C  $\sin 2x$
- D  $\cos 2x$
- E  $2 \cos 2x$

10.



The graph illustrates the law

$$p = av^n.$$

The value of  $n$  is nearest to

- A -0.60
- B 0.25
- C 0.60
- D 1.3
- E 4.0