



A. 20

B. 12

C. 0

D. -12

17. Given that  $\vec{a} = 5i + 7j$  and  $\vec{b} = 4i - 5j$ , then

 $\vec{a} - 2\vec{b}$  isA.  $-3i - 3j$ B.  $3i - 17j$ C.  $3i + 3j$ D.  $-3i + 17j$ 

18. Given the vector  $\vec{OP} = 2i + j$ , the direction of the vector is

A.  $63.4^\circ$ B.  $26.6^\circ$ C.  $90^\circ$ D.  $116.6^\circ$ 

19. Two vectors  $ai + 2j$  and  $6i + 4j$  are said to meet at right angles. The value of  $a$  is:

A.  $\frac{4}{3}$ B.  $\frac{3}{4}$ C.  $-\frac{4}{3}$ D.  $-\frac{3}{4}$ 

20. Given the matrices  $M = \begin{pmatrix} 3 & 4 \\ 1 & -2 \end{pmatrix}$ , and

$N = \begin{pmatrix} 5 & 2 \\ -3 & 1 \end{pmatrix}$ , then  $M + N =$

A.  $\begin{pmatrix} 8 & 6 \\ 4 & 3 \end{pmatrix}$ B.  $\begin{pmatrix} 8 & 6 \\ -2 & -2 \end{pmatrix}$ C.  $\begin{pmatrix} 8 & 6 \\ -2 & -1 \end{pmatrix}$ D.  $\begin{pmatrix} 8 & 6 \\ -3 & -3 \end{pmatrix}$ 

1.  $a^2(\sqrt[m]{a})^{-n} \equiv$

A.  $(a)^{\frac{-2n}{m}}$ B.  $(a)^{\frac{-2m}{n}}$ C.  $(a)^{\frac{2n-m}{n}}$ D.  $(a)^{\frac{2m-n}{m}}$ 

2.  $\log a + b \log x = \log t \Rightarrow$

A.  $ax^b = t$ B.  $a + b^x = t$ C.  $a + x^b = t$ D.  $ab^x = t$ 

3. The product of root of the equation

$x^2 - 4x + 6 = 0$  is:

24. The quadratic equation in  $x$  whose roots are  $\frac{1}{2}$  and

$\frac{3}{2}$  is:

A.  $4x^2 + 8x - 3 = 0$ B.  $4x^2 - 3x + 8 = 0$ C.  $4x^2 - 8x + 3 = 0$ D.  $4x^2 + 3x - 8 = 0$ 

25. Given that  $(x + 1)$  is a factor of the polynomial

$(x - 2)(x + 2)(x - a)$ , then the value of  $a$  is:

A. 1

B. -1

C. -3

D. 3

26. The  $n^{\text{th}}$  term,  $T_n$ , of a sequence is given by

$T_n = 2^{-n}(2^{2n-1})$ . The 5<sup>th</sup> term is:

A. 16

B. 60

C. 180

D. 32

27. Given that the arithmetic mean of  $x$  and  $y$  is  $m$ , then

A.  $m^2 = xy$ B.  $m = 2(x + y)$ C.  $\sqrt{m} = xy$ D.  $2m = x + y$ 

28.  $\frac{4\pi}{3}$  radians =

A.  $120^\circ$ B.  $240^\circ$ C.  $110^\circ$ D.  $270^\circ$ 

29. Expressed in surd form,  $\sin 135^\circ =$

A.  $\frac{\sqrt{3}}{2}$ B.  $\sqrt{2}$ C.  $\frac{\sqrt{2}}{3}$ D.  $\frac{\sqrt{2}}{2}$ 

30. Given that  $\tan \theta = \sqrt{3}$ , for  $0^\circ \leq \theta \leq 90^\circ$ , then

$\theta =$

A.  $120^\circ$ B.  $60^\circ$ C.  $30^\circ$ D.  $150^\circ$