31st January, 2024
Shift-2

EE24BTECH11063 - Y.Harsha Vardhan Reddy

Single correct

1) Let $A(a,b)$, $B(3,4)$ and $C(-6,-8)$ respectively denote the centroid, circumcentre and orthocentre of a triangle. Then, the distance of the point $P(2a+3, 7b+5)$ from the line $2x+3y-4=0$ measured parallel to the line $x-2y-1=0$ is

a) $\frac{15\sqrt{5}}{7}$ b) $\frac{\sqrt{5}}{17}$ c) $\frac{17\sqrt{5}}{7}$ d) $\frac{17\sqrt{5}}{6}$

2) The temperature $T(t)$ of a body at a time $t=0$ is 160° F and it decreases continuously as per the differential equation $\frac{dT}{dt} = -K(T-80)$, where K is a positive constant. If $T(15) = 120°\ F$, then $T(45)$ is equal to

a) 85° F b) 95° F c) 90° F d) 80° F

3) The area of the region enclosed by the parabolas $y = 4x - x^2$ and $3y = (x-4)^2$ is equal to

a) 6 b) 4 c) $\frac{32}{9}$ d) $\frac{14}{3}$

4) The number of solutions, of the equation $e^{\sin x} - 2e^{-\sin x} = 2$, is:

a) 1 b) 2

c) more than 2 d) 0

5) If for some m,n : ${}^6C_m + 2\left({}^6C_{m+1}\right) + {}^6C_{m+2} > {}^8C_3$ and ${}^{n-1}P_3 : {}^nP_4 = 1:8$, then ${}^nP_{m+1} + {}^{n+1}P_m$ is equal to

a) 380 b) 384 c) 376 d) 372