

(15) Find eqn of parabola whose focus is $(3, 2)$ and eqn of directrix $x + y + 3 = 0$.

(16) Prove that points $(-2, 3, 5)$, $(1, 2, 3)$ and $(7, 0, -1)$ are collinear.

(17) Find the limit $\lim_{x \rightarrow \infty} \left(\frac{3x^2 + 4x + 5}{2x^2 + 5x + 6} \right)$.

(18) Find the derivative of $f(x) = \sin^2 x$ by first principle.

- (1) Define power set, if set A has n elements and no. of elements in its power set.
- (2) Prove that sets $A-B$, $A \cap B$ and $B-A$ are mutually disjoint sets.
- (3) Let A and B are two non empty sets then prove that $A-B = A \cap B'$
- (4) Prove that $\cos^2 x + \cos^2 (x+60^\circ) + \cos^2 (x-60^\circ) = 3/2$.
- (5) Draw the graph of $\sin^2 x$, $|\cos x|$, $\tan x$.
- (6) Write the polar form of complex no. $-1-i$...
- (7) Solve inequality $2x+y \geq 6$ by graphical method.
- (8) How many 4 digit numbers can be formed by using the digits 1 to 9 if repetition of digits is not allowed.
- (9) Write the LCM of ${}^n C_r$ and ${}^n P_r$.
- (10) Expand $(2x-3)^6$.
- (11) Find the no. of terms in $(x+y+z)^{100}$.
- (12) Insert five numbers 4 and 13 such that the resulting sequence is an AP.
- (13) Find the sum of n terms of the series $\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} \dots$
- (14) Find the coordinates of the foot of the perpendicular from the point $(-1, 3)$ to the line $3x - 4y - 16 = 0$