CLASS IX
GUESS PAPER
MATHS

SECTION – A [1 mark each]

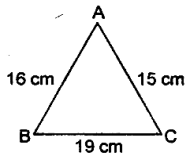
1. The value of k, for which the polynomial $x^3 - 3x^2 + 3x + k$ has 3 as its zero, is:
(A) -3 (B) 9 (C) - 9 (D) 12

2. The factorisation of $- x^2 + 5x - 6$ yields:
(A) (x -2) (x -3) (B) (2 + x) (3 - x) (C) -(x- 2) (3 - x) (D) -(2 - x) (3 - x)

3. The zero of the polynomial p(x) = 2x + 5 is:
(A) 2/5 (B) 5/2 (C) 0 (D) -5/2

4. Degree of which of the following polynomial is zero:
(A) x (B) 15 (C) y (D) $x+\frac{1}{x}$

5. In the given figure which of the following statement is true ?

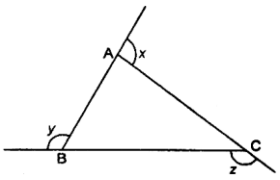


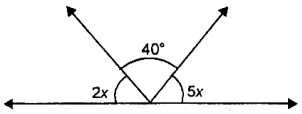
(A)∠B=∠C (B) ∠B is the greatest angle in triangle
(C) ∠B is the smallest angle in triangle (D) ∠A is the smallest angle in triangle

6. The semi perimeter of a triangle having the length of its sides as 20 cm, 15 cm and 9 cm is
(A) 44 cm (B) 21 cm (C) 22 cm (D) none of these

7. In ΔABC, ∠x + ∠y + ∠z is equals:
(A) 120° (B) 180°
(C) 240° (D) 360°

8. In the given figure, the value of x is:
(A) 30° (B) 10°
(C) 20° (D) 40°

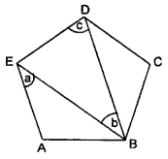




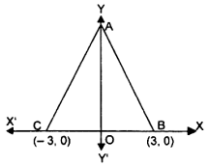
SECTION – B [2 mark each]

9. ***If*** $x = 7 + \sqrt{40}$ ***, find the value of*** $\sqrt{x} + \frac{1}{\sqrt{x}}$

10. In figure, ABCDE is a regular pentagon. Find the relation between 'a', 'b' and 'c'.



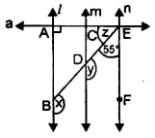
11. In figure, ABC is an equilateral triangle. The coordinates of vertices B and C are (3, 0) and (− 3, 0) respectively. Find the coordinates of its vertex A.



12. ***Evaluate :*** $\left\{\sqrt{5+2\sqrt{6}}\right\}+\left\{\sqrt{8-2\sqrt{15}}\right\}$

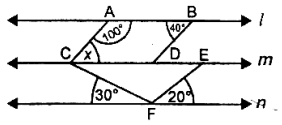
13. Simplify the following $\frac{7+3\sqrt{5}}{3+\sqrt{5}}-\frac{7-3\sqrt{5}}{3-\sqrt{5}}$

14. In figure, ℓ | | m | | n and a $\perp$ ℓ. If ∠BEF = 55°, Find the values of x, y and z.



SECTION – C [3 marks each]

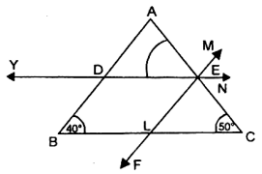
15. ***If $a = 9 - 4\sqrt{5}$, find the value of $a^2 + \frac{1}{a^2}$***



16. If $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ = a + $\sqrt{15}$ b, find the value of a and b

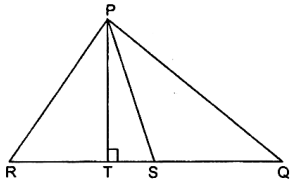
17. Factorise the following: $12(x^2 + 7x)^2 - 8(x^2 + 7x)(2x - 1) - 15(2x - 1)^2$

18. In figure, ℓ | | m | | n, ∠CFE=y, from the figure find the value of (y + x) : (y - x)



19. In figure, DE | | BC and MF | | AB. Find (i) ∠ADE + ∠MEN (ii) ∠BDE (iii) ∠BLE

20. In the given figure, ∠R > ∠Q and S is a point on RQ such that PS is the bisector of ∠QPR and PT ⊥ RQ. Show that ∠TPS = $\frac{1}{2}$ (∠R - ∠Q).

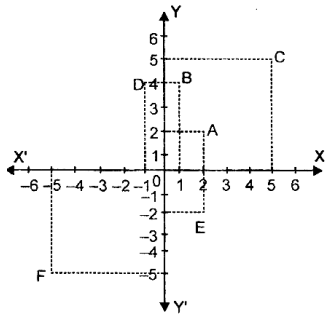


21. ***If $x = \frac{1}{2-\sqrt{3}}$, find the value of $x^3 - 2x^2 - 7x + 5$***

22. ***if $x = \frac{\sqrt{p+2q}+\sqrt{p-2q}}{\sqrt{p+2q}-\sqrt{p-2q}}$, then show that $qx^2 - px + q = 0$***

23. Prove that $(x+y)^3+(y+z)^3+(z+x)^3-3(x+y)(y+z)(z+x)=2(x^3+y^3+z^3-3xyz)$

24. From figure,find the coordinates of the points A, B, C, D, E and F Which of the points are mirror images in (i) x-axis (ii) y-axis ?



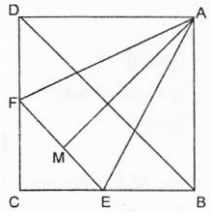
SECTION – D [4 marks each]

25. ***Simplify :*** $\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\ldots+\frac{1}{\sqrt{8}+\sqrt{9}}$

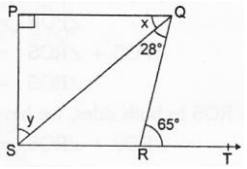
26. ***If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $y = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, find the value of $x^2 + y^2 + xy$***

27. If $x^3 + mx^2 - x + 6$ has $(x - 2)$ as a factor, and leaves a remainder n when divided by (x - 3),find the values of m and n.
(ii) Without actual division, prove that the polynomial $2x^4 - 5x^3 + 2x^2 - x + 2$ is exactly divisible by $x^2 - 3x + 2$.

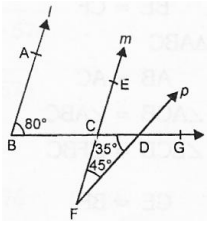
28. In figure, ABCD is a square and EF is parallel to diagonal BD and EM = FM. Prove that (i) DF = BE (ii) AM bisects ∠BAD



29. (i) In the given figure, if PQ ⊥ PS, PQ || SR, ∠SQR = 28° and ∠QRT = 65°, then find the values of x and y.



(ii) In the given figure, prove that ℓ || m.

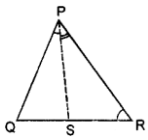


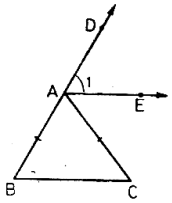
30. Factorise $3x^3 - x^2 - 3x + 1$. (ii) State Euclid's fifth postulate.

31. Find the values of a and b so that the polynomial $x^3 - ax^2 - 13x + b$ has x -1 and x + 3 as factors.

32. In a ΔABC, the sides AB and AC are produced to D and E respectively. The bisectors of ∠DBC and ECB intersect at a point O. Prove that, $\angle BOC = 90° - \frac{1}{2}\angle A$.

33. (i) In Fig., AE bisects ∠CAD and ∠B = ∠C. Prove that AE || BC.





(ii) In figure, PR > PQ and PS bisects ∠QPR. Prove that ∠PSR > ∠PSQ.

34. The base of an isosceles triangle measures 24 cm and its area is 60 cm^2. Find the perimeter.

(ii) Show that 2 and $-\frac{1}{3}$ are the zeroes of the polynomial $3x^3 - 2x^2 - 7x - 2$. Also, find the third zero of the polynomial.