1. If 7x5x3x2 + 3 is composite number? Justify your answer

2. Show that any positive odd integer is of the form 4q + 1 or 4q +3 where q is a positive integer

3. Prove that \( \sqrt{2} + \sqrt{5} \) is irrational

4. Use Euclid’s Division Algorithms to find the H.C.F of
   a) 135 and 225
   b) 4052 and 12576
   c) 270, 405 and 315

5. Prove that \( 5 - 2\sqrt{3} \) is an irrational number

6. Find the HCF and LCM of 26 and 91 and verify that LCM \( \times \) HCF = Product of two numbers

7. Explain why \( \frac{29}{2^3 \times 5^3} \) is a terminating decimal expansion

8. Given that LCM (77, 99) = 693, find the HCF (77, 99)

9. Find the greatest number which exactly divides 280 and 1245 leaving remainder 4 and 3

10. Prove that \( \sqrt{2} \) is irrational

11. The LCM of two numbers is 64699, their HCF is 97 and one of the numbers is 2231. Find the other

12. If HCF (6, a) = 2 and LCM (6, a) = 60 then find a

13. Two numbers are in the ratio 15: 11. If their HCF is 13 and LCM is 2145 then find the numbers

14. Express 0.363636............. in the form a/b

15. Find the HCF 52 and 117 and express it in the form 52x + 117y

16. Write the HCF of smallest composite number and smallest prime number

17. Write whether \( \frac{2\sqrt{45} + 3\sqrt{20}}{2\sqrt{5}} \) on simplification give a rational or an irrational number
1. Show that $x^2 - 3$ is a factor of $2x^4 + 3x^3 - 2x^2 - 9x - 12$

2. Divide: $4x^3 + 2x^2 + 5x - 6$ by $2x^2 + 3x + 1$ \((2x-2, 9x-4)\)

3. Find other zeroes of the polynomial $p(x) = 2x^4 + 7x^3 - 19x^2 - 14x + 30$ if two of its zeroes are $\alpha$ and $-\alpha$ \((3/2, -5)\)

4. Find all the zeroes of the polynomial $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{5}/3$ and $-\sqrt{5}/3$ \((-1, 1)\)

5. Find all the zeroes of $2x^4 - 3x^3 - x^2 + 6x - 2$, if it is known that two of its zeroes are $x$ and $-x$ \((1, 1/2)\)

6. If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$, is divided by another polynomial $x^2 - 2x + k$ the remainder comes out to be $x + a$, find $k$ and $a$ \((k = 5, a = -5)\)

7. Find the polynomial, whose zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$ \((x^2 - 4x + 1)\)

8. Form a quadratic polynomial, one of whose zero is $2 + \sqrt{5}$ and the sum of zeroes is $4$

9. If $\alpha$ and $\beta$ are zeroes of the polynomial $x^2 - 2x - 15$, then form a quadratic polynomial whose zeroes are $2\alpha$ and $2\beta$

10. Write a quadratic polynomial, the sum and product of whose zeroes are $3$ and $-2$ \((x^2 - 3x - 2)\)

11. Find the zeroes of the polynomial and verify the relationship between the zeroes and the coefficient
   a) $4x^2 - 4x + 1$
   b) $x^2 - 3$
   c) $\sqrt{3}x^2 - 8x + 4\sqrt{3}$

12. If $\alpha$ and $\beta$ are the zeroes of the polynomial $2y^2 + 7y + 5$, write the value of $\alpha + \beta + \alpha\beta$ \((-1)\)

13. If one root of the polynomial $5x^3 + 13x + k$ is reciprocal of the other, then find the value of $k$?

14. What must be subtracted from $2x^4 - 11x^3 + 29x^2 - 40x + 29$, so that the resulting polynomial is exactly divisible by $x^2 - 3x + 4$ \((-2x + 5)\)

15. If the polynomial $6x^4 + 8x^3 - 5x^2 + ax + b$ is exactly divisible by the polynomial $2x^2 - 5$, then find the values of $a$ and $b$ \((-20, -25)\)

16. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a - b$, $a$, $a + b$, find $a$ and $b$ \((1, \pm\sqrt{2})\)

17. On dividing $x^3 - 3x^2 + x + 2$ by a polynomial $g(x)$, the quotient and remainder were $x - 2$ and $-2x + 4$, respectively. Find $g(x)$ \((x^2 - x + 1)\)

18. If $\alpha$ and $\beta$ are the zeroes of the polynomial $f(x) = 6x^2 + x - 2$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - \alpha\beta$ \((5/6)\)

19. If $\alpha$ and $\beta$ are the zeroes of the quadratic polynomial $2x^2 + 3x - 5$, find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ \((-3/5)\)

20. If $\alpha$ and $\beta$ are the zeroes of the polynomial $f(x) = x^2 - 5x + k$ such that $\alpha - \beta = 1$, find $k$ \((6)\)

21. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is $4$, find the value of $a$ \((-3/2)\)

22. If $\alpha, \beta$ are the zeroes of quadratic polynomial $2x^2 + 5x + k$, find the value of $k$ such that $(\alpha + \beta)^2 - \alpha\beta = 24$
1. If \(\cot \Theta = \frac{15}{8}\), evaluate \((2 + 2\sin \Theta)(1 - \sin \Theta)\) \(\frac{(1 + \cos \Theta)(2 - 2\cos \Theta)}{225/64}\) 

2. If \(7\sin^2 \Theta + 3\cos^2 \Theta = 4\), show that \(\tan \Theta = \sqrt{3}\) 

3. Evaluate: \(\tan^2 60° - 2\cos^2 60° - \frac{3}{2}\sin^2 45° - 4\sin^2 30°\) \(9/8\) 

4. Evaluate: \(\sec^2 54° - \cot^2 36° + 2\sin^2 38°\sec^2 52° - \sin^2 45°\) 
\(\text{Cosec}^2 57° - \tan^2 33°\) \(5/2\) 

5. Evaluate: \(\sqrt{2}\tan^2 45° + \cos^2 30° - \sin^2 60°\) \(\sqrt{2}\) 

6. If \(\sec^2 \Theta(1 + \sin \Theta)(1 - \sin \Theta) = k\), find the value of \(k\) \(k = 1\) 

7. Evaluate: \((\sin 90° + \cos 45° + \cos 60°)(\cos 0° - \sin 45° + \sin 30°)\) \(7/4\) 

8. Find the value of: 
\[
\frac{2\sin 68°}{\cos 22°} \quad \frac{2\cot 15°}{5\tan 75°} \quad \frac{3\tan 45° \tan 20° \tan 40° \tan 50° \tan 70°}{5}
\]
\(1\) 

9. If \((A + B) = 1\), \((A - B) = 1\), find \(A\) and \(B\) \(45°, 45°\) 

10. If \(\cos(40° + x) = \sin 30°\), find the value of \(x\) \(20°\) 

11. \(\sin 4A = \cos(A - 20°)\), where \(4A\) is an acute angle, find the value of \(A\) \(22°\) 

12. Find the acute angles \(A\) and \(B\), \(A > B\), if \(\sin(A + 2B) = \sqrt{3}/2\) and \(\cos(A + 4B) = 0\) \(30°, 15°\) 

13. Evaluate: \(\sec(90° - \Theta)\cosec \Theta - \tan(90° - \Theta)\cot \Theta + \frac{\cos^2 35 + \cos^2 55}{\tan 5° \tan 15° \tan 45° \tan 75° \tan 85°}\) \(2\) 

14. If \(\sin A - \cos B = 0\), prove that \(A + B = 90°\) 

15. If \(\sin \Theta + \cos \Theta = 5\), evaluate \(\frac{7\tan \Theta + 2}{\sin \Theta - \cos \Theta} + \frac{2\tan \Theta + 7}{3}\) \(2\) 

16. What is the maximum value of \(1/\sec \Theta\) 

17. If \(A\), \(B\) and \(C\) are interior angles of triangle \(ABC\), show that \(\cos\left\{\frac{B+C}{2}\right\} = \sin \frac{A}{2}\) 

18. If \(x = a\sin \Theta, y = b\tan \Theta\). Prove that \(\frac{a^2 - b^2}{X^2} = \frac{1}{2}\) \(\frac{b^2}{Y^2}\) 

19. Prove that: \(\frac{1}{1 + \sin \Theta} + \frac{1}{1 - \sin \Theta} = 2\sec^2 \Theta\) 

20. Prove that: \(\frac{\sin \Theta}{1 + \cos \Theta} + \frac{1 + \cos \Theta}{\sin \Theta} = 2\cosec \Theta\)