Algebraic Expressions

1. if $y^4 - \frac{1}{y^4} = 88\sqrt{30}$, then find value of y.

2. $p^2 = 9 + 4\sqrt{5}$, then find value of $p^4 - \frac{1}{p^4}$.

3. $a^4 + a^2b^2 + b^4 = 48$ and $a^2 + ab + b^2 = 8$ then find the value of a and b. $a, b \in$ (+ve Integer) Z_+

4. if $p^4 + \frac{1}{p^4} = 119$ prove, $p = 3 + \frac{1}{p}$.

5. $p^2 + q^2 = 4\sqrt{64}$ and $p^2 - q^2 = 4\sqrt{81}$, then find the value of $8p^2q^2(p^4 + q^4)$.

6. $m + n = \sqrt{6}$; $m - n = \sqrt{5}$, then find the value of $24mn(m^2 + n^2)$.

7. If $(a+b+c) = 0$, then prove, $\frac{(b+c)^2}{6bc} + \frac{(c+a)^2}{6ca} + \frac{(a+b)^2}{6ab} = \frac{1}{2}$

8. if $p^4 = 119 - \frac{1}{p^4}$, then, proove $p^6 - 1 - 36p^3 = 0$

9. $m^2 - \sqrt{5}m + 1 = 0$; $m > 0$ then prove that, $m^5 - \frac{1}{m^5} = 11$.

10. $p = 9 + 4\sqrt{5}$, then prove $p\sqrt{p} + \frac{1}{p\sqrt{p}} = 34\sqrt{5}$.

11. if $(a+2) + \frac{1}{a+2} = 5$, then show that $(a+2)^5 + \frac{1}{(a+2)^5} = 2525$.

12. if $y = \sqrt{\frac{5y}{2} + \frac{1}{6}}$, then find the value of $\frac{216y^6 - 1}{24y^3} = ?$

13. $(x+y)^2 = 3\sqrt{27}$ and $(x-y)^2 = 3\sqrt{8}$; Prove $5(x^3y + xy^3) = \frac{25}{8}$.

14. $a+b+c = m$; $a^2+b^2+c^2 = n$ and $a^3+b^3 = p^3$; if $c = 0$, then show that $m^3 + 2p^3 = 3mn$.

15. $a+b+c=15$, $a^2+b^2+c^2=83$. Then show the value of -
$(a+b)^2+(b+c)^2+(c+a)^2=?$

16. $p^2=3p-\frac{1}{p}$ and $p>1$.
Show, $p^2-\frac{1}{p^2}=24476$.

17. if $x+\frac{1}{x^2}=3$, then show that $x^6+\frac{1}{x^6}=18$.

18. Resolve in factor:
$(2x+1)(2x+3)(2x+5)(2x+7)+15^4$

19. $(a^2-b^2)(x^2-y^2)+4abxy$ (Resolve into factors)

20. Resolve into factors:
$(a-1)x^2+a^2xy+(a+1)y^2$

21, Resolve into factors:
$2b^2c^2+2c^2a^2+2a^2b^2-a^4-b^4-c^4$

22. $(3a+1)^3-(2a+3)^3$. Resolve into factors.

23. Resolve into factors:
$4x^3-5x^2+5x-1$

24. For a picnic, a bus was hired at Tk-2400 and it was decided that every passenger could have to give equal fare. But due to the absence of 10 passengers, fare per head was increased by Tk 8.

How many passengers did go by the bus and how much money did each of the passengers give as fare?,

25. The loss is 50%. when 10 lemons are sold at 50 tk. What will be the profit or loss if 6 lemons are sold 50 tk?

26. A can do a work in p days and B can do a work in 2p days. They started to do the work together and after some days A left the work unfinished. B completed the rest of the work in n days. In how many days was the work finished?

27. A boatman goes 15 km and returns from there in 4 hrs playing by oar. He goes 5 km at a period of time against the current. Find the speed of the oar and current.