

1. Factorize the following by splitting the middle term:
 (a) $3x^2 + 11x + 30$ (b) $2\sqrt{2}x^2 + 9x + 5\sqrt{2}$ (c) $4x^2 - 13x + 10$
2. Factorize the following by Factor theorem:
 (a) $x^3 + 9x^2 + 23x + 15$ (b) $x^3 + 6x^2 + 11x + 6$
3. Factorize the following by using a suitable identity:
 (a) $4x^2 + 12xy + 9y^2$ (b) $(a-b)^3 + (b-c)^3 + (c-a)^3$ (c) $x^8 - y^8$
4. Evaluate the following using a suitable identity:
 (a) 998^3 (b) 10.2^3 (c) 9.8^3
 (d) $998^2 - 4$ (e) $999^2 - 1$ (f) $(-25)^3 + 10^3 + 15^3$
 (g) $10.2 * 9.8$
5. If 5 is a zero of $x^3 + kx^2 + 2x + 8$ find k .
6. If $(x-2)$ is a zero of $x^3 - 4x^2 + kx - 8$ find k .
7. If $(x-2)$ and $(x+3)$ are factors of $x^3 + ax^2 + bx - 30$, find a and b .
8. If $x + y + z = 8$ and $xy + yz + zx = 20$ find the value of $x^3 + y^3 + z^3 - 3xyz$.
9. If $a + b + c = 9$ and $a^2 + b^2 + c^2 = 35$ find the value of $a^3 + b^3 + c^3 - 3abc$.
10. Factorize the following by using a suitable identity:
 (a) $a^3 + b^3 - 8c^3 + 6abc$ (b) $(a/b)^3 + (b/c)^3 + (c/a)^3 - 3$
 (c) $8x^3 - 27y^3 + 125z^3 + 90xyz$
11. Find the value of $a^3 + 8b^3$ if $a + 2b = 10$ and $ab = 15$.
12. Find the value of $a^3 - 27b^3$ if $a - 3b = (-6)$ and $ab = (-10)$
13. Factorize: $x^3 + 1/x^3 - 2$
14. If $ab + bc + ca = 10$ and $a^2 + b^2 + c^2 = 44$ find $a^3 + b^3 + c^3 - 3abc$.
15. Show that $x - 2$ is a factor $p(x) = x^3 - 12x^2 + 44x - 48$
16. Factorize $x^3 - 2x^2 - 5x + 6$
17. If $x + p$ is a factor of $p(x) = x^5 - p^2x^3 + 2x + p + 1$ find the value of P .

18. Factorize:

(a) $a^2 + 1/a^2 + 2$

(b) $3(x+2)^2 + 17(x+2) + 10$

(c) $4x^2 - 9y^2 + 20x + 25$

