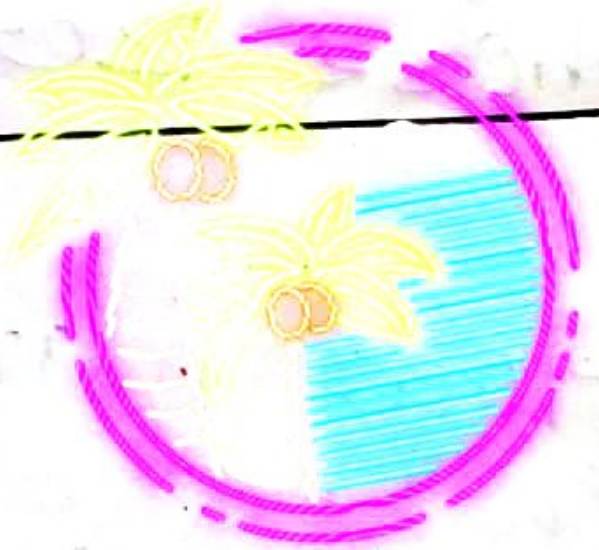
11.

PRACTICE - TIME.



Exam Based Questions:

Q.1. Find the Value for k for which $x^4+10x^3+25x^2+15x+k$ exactly divisible by $x+7$.

Soln: Let

$$p(x) = x^4+10x^3+25x^2+15x+k$$

and $g(x) = x+7$

Since $p(x)$ exactly divisible by $g(x)$

$\therefore r(x) = 0$

now,

$$
\begin{array}{r|l}
x+7 & x^3+3x^2+4x-13 \\
\hline
 & x^4+10x^3+25x^2+15x+k \\
 & -(x^4+7x^3) \\
 & \quad 3x^3+25x^2 \\
 & \quad -(3x^3+21x^2) \\
 & \quad\quad 4x^2+15x \\
 & \quad\quad -(4x^2+28x) \\
 & \quad\quad\quad -13x+k \\
 & \quad\quad\quad -(-13x-91) \\
 & \quad\quad\quad k+91
\end{array}
$$

$\therefore \quad k+91=0$

$$\boxed{k=-91}$$

$$(\alpha-\beta)^2 = 144$$

Let $p(x) = x^2 + px + 45$

$$\alpha+\beta = -\frac{b}{a} = \frac{-p}{1} = -p$$

$$\alpha\beta = \frac{c}{a} = \frac{45}{1} = 45$$

Now

$$(\alpha-\beta)^2 = 144$$

$$\Rightarrow (\alpha+\beta)^2 - 4\alpha\beta = 144$$

$$\Rightarrow (-p)^2 - 4(45) = 144$$

$$\Rightarrow p^2 - 180 = 144$$

$$\Rightarrow p^2 = 144 + 180$$

$$\Rightarrow p^2 = 324 \quad \therefore p = \pm 18$$

So, $p = \pm 18$.

Q.2. If two zeros of the polyno-
-mial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$
are $2 \pm \sqrt{3}$. Find the other
zeroes.

[other zeroes are 7 & -5].

Q.3. If the squared difference of the zeros of the quadratic polynomial $x^2 + px + 45$ is equal to 144, find the value of p.

Soln: Let two zeros are α & β where $\alpha > \beta$.

According to given conditio

Q.4. Form a quadratic polynomial whose zeroes are $\frac{2}{3}$ and $\frac{-1}{3}$.

Q.5. If -1 is a zero of the polynomial $f(x) = x^2 - 7x - 8$, then find the other zero.

Q. Short question – (1 mark).

(i) The graph of $y = ax^2 + bx + c$, where $a > 0$ is a _____, opening _____.

(ii) The graph of $y = ax^2 + bx + c$, where $a < 0$ is a parabola, opening _____.

(iii) Write a quadratic polynomial whose zeros are 5 and -3.

(iv) How many polynomials are there having 4 and -2 as zeros?

(v) If one zero of the quadratic polynomial $(k-1)x^2+kx+1$ is -4, then the value of k is?

(vi) If the sum of the zeros of the quadratic polynomial $kx^2+2x+3k$ is equal to the product of its zeros, then $k=?$

(vii) If α, β are the zeros of the polynomial ax^2+bx+c, then $(\alpha^2+\beta^2)=?$

(viii) On dividing a polynomial $p(x)$ by a non-zero polynomial $q(x)$, let $g(x)$ be the quotient and $r(x)$

be the remainder, then

$p(x) = q(x) \cdot g(x) + r(x)$, where

(a) $r(x) = 0$ always.

(b) $\deg r(x) < \deg g(x)$ always.

(c) either $r(x) = 0$ or $\deg r(x) < \deg g(x)$

(d) $r(x) = g(x)$.

(ix) If the zeros of a quadratic polynomial $ax^2 + bx + c$ are both negative, then a, b, c will have the same sign. (True / False).

(x) If α and β are the zeros of a quadratic polynomial $p(x)$, then $p(x) = \{x^2 - (\text{---})x + \text{---}\}$.