— ◆ —

Zadatak 40.   Odredi središte i polumjer kružnice kojoj je jednadžba:

1) $x^2 + y^2 - 2x + 4y + 1 = 0$;

2) $x^2 + y^2 + y = 0$;

3) $3x^2 + 3y^2 + 6x - 4y - 1 = 0$;

4) $5x^2 + 5y^2 + 10x - y = 0$.

Rješenje.   **1)** Opći oblik jednadžbe kružnice glasi: $x^2 + y^2 + ax + by + c = 0$, $a = -2p$, $b = -2q$ i $c = p^2 + q^2 - r^2$.

$-2 = -2p \implies p = 1$

$4 = -2q \implies q = -2$

$1 = 1^2 + (-2)^2 - r^2 \implies r^2 = 4$

$S(1, -2)$, $r = 2$;

2) $0 = -2p \implies p = 0$

$1 = -2q \implies q = -\dfrac{1}{2}$

$0 = \dfrac{1}{4} - r^2 \implies r^2 = \dfrac{1}{4}$

$S\left(0, -\dfrac{1}{2}\right)$, $r = \dfrac{1}{2}$;

3) $x^2 + y^2 + 2x - \dfrac{4}{3}y - \dfrac{1}{3} = 0$

$2 = -2p \implies p = -1$

$-\dfrac{4}{3} = -2q \implies q = \dfrac{2}{3}$

$-\dfrac{1}{3} = 1 + \dfrac{4}{9} - r^2 \implies r^2 = \dfrac{16}{9}$

$S\left(-1, \dfrac{2}{3}\right)$, $r = \dfrac{4}{3}$;

4) $x^2 + y^2 + 2x - \dfrac{1}{5}y = 0$

$2 = -2p \implies p = -1$

$-\dfrac{1}{5} = -2q \implies q = \dfrac{1}{10}$

$0 = 1 + \dfrac{1}{100} - r^2 \implies r^2 = \dfrac{101}{100}$

$S\left(-1, \dfrac{1}{10}\right)$, $r = \dfrac{\sqrt{101}}{10}$.