Téma: **Kvadratické rovnice**  Pracovný list

1/ **Riešte v R neúplné kvadratické rovnice bez použitia diskriminantu:**

1. 2x2 + 9x = 0

x(2x+9) = 0

x1=0 a  2x+9=0

x=−9/2=−4,5 => K={-4,5; 0}

1. 3 x2 = 6x / – 6x

3 x2 – 6x = 0

3 x (x– 6) = 0

x1=0 x2=6 => K={0, 6}

1. 4 x2 – 64 = 0

(2x)2 – 82 =0

(2x+8)(2x–8)=0

2x+8=0 a 2x–8=0

x1=–4 a x2=4 => K={–4, 4}

1. 16 – 7x2 = 79 / –79

–7x2 – 63 = 0

–7 (x2 – 9) = 0

–7 (x–3)(x+3) = 0

x1=3 x2=–3 => K={–3, 3}

1. 1,8x2 – 2 = 3 /–3

1,8x2 – 5 = 0 /:1,8

=>

1. (2x – 3 )2 = 81 – 12x
2. 2*x*2 + 9*x* = 0

**2/ Riešte v Z úplné kvadratické rovnice (ak sa dá bez diskriminantu):**

1. x2 – 4x + 4 = 0

x2 – 2.2x + 22 = 0

(x–2)2 = 0

(x–2)(x–2) = 0

x = 2 ∈Z => K = {2}

1. x2 + 6x + 9 = 0

x2 +2. x .3 + 32 = 0 a2 +2.a.b + b2 = (a+b)2

(x+3)2 = 0

(x+3)(x+3) = 0

x = -3 ∈ Z => K = {-3}

1. x2 + 2,4x + 1,44 = 0

x2 +2. x .1,2 + 1,22 = 0

(x+1,2)2 = 0

x = -1,2 ∉ Z => K = { }

1. x2 – x + 0,25 = 0 D.ú.

**3/ Riešte v N pomocou diskriminantu:**

**D=b2−4ac;**

1. x2 – 5x – 24 = 0 ax2 +bx +c = 0

a=1 b=−5 c=– 24 => D=b2−4ac= 25−4.1.( −24)=25+96=121 >0 => 2 riešenia

=> K={8}

1. x2 – 4x + 15 = 0

a=1 b=−4 c=+15 => D=b2−4ac=16−4.1.15=16−60=−44 < 0 => 0 riešení

* K={ }

1. 

a=3 b=−3 c=−6 => D=b2−4ac=9−4.3.( −6)=9+72=81 >0 => 2 riešenia

=> K={2}

1. x D.ú.

**4/ Upravte do tvaru kvadratickej rovnice v základnom tvare a vyriešte pomocou vzorca v R:**

1. x2 – 4x = 4x - 15 /– 4x /+15

x2 – 8x + 15 = 0

a=1 b=−8 c=15 => D=b2−4ac=64−4.1.15=64−60=4 >0 => 2 riešenia

=> K={3, 5}

1. 2 x2 + 11x + 31 = 3 – 19x D.ú.
2. 3 x2 – 2x + = 0

x1 = 0 2x-17=0

x2 =17/2 => K={0; 17/2}

1. x ( x – 2 ) = 2
2. (x − 6)2 + (x − 8)2 = 0

x2 −2.6.x+36 + x2 −2.8.x + 64 = 0

2x2 −28.x+100=0 /:2

x2 −14.x+50=0

a=1 b=−14 c=50 => D=b2−4ac=(-14)2−4.1.50=196−200=−4 < 0 => 0 riešení => K={ }