

BASIC ARITHMETIC

1. $(x - 2)^2 + (x - 9)^2 = (x - 11)^2$

(± 6)

2. $\frac{x+1}{x+3} - \frac{x-1}{x+5} = \frac{x(x-1)+12}{x(x+8)+15}$

(1,4)

ARITHMETIC PROGRESSION

3. Give the first six members of following arithmetic series:

$$a_1 + a_4 + a_6 = 71$$

$$a_5 + a_2 + a_3 = 2$$

(5, 12, 19, 26, 33, 40)

4. $x + 4x + 7x + 10x + \dots + 367x = 1468$

(15.41689)

5. Find S_{1000}

$$1 + 2 + 3 + \dots + 1000 = ?$$

(500,500.00)

GEOMETRIC PROGRESSION

6. Give the first three members of following series:

$$A_1 - A_2 + A_3 = 9$$

$$A_4 - A_5 + A_6 = 72$$

(9, 6, 12)

7. You ride a bicycle over one week. You start on Monday and the first day you ride 20 km. Up the next day you always ride 5 km more. How many kilometers do you ride on Sunday and how many kilometers did you ride after one week?

(50, 245)

8. Solve the same example, but now your progress is always 5 % more to the previous ride.

(26.802, 162.84)

9. You put 1 dollar on your bank account. At the end of every year you will obtain five cents as interest. How much you will have on your bank account after seven years?

(1.35)

10. Solve the same example if the bank promise you to pay 5 % of your current balance account.

(1.4071)

11. What will be the balance on your bank account if you save on April, 1 2018 CZC 1,0800,000.00 and on September, 1 2018 you will withdraw all your deposit? The interest rate is 4.2 % p. a. and the bank calculates interest once a year.

(CZC 1,098,900.00)

12. Solve the previous example applying the concept of compound interest.

(CZC 1,098,673.00)

13. How much you need to put on the bank account to obtain PLN 1,457,286.261 after 5.7 years? The annual interest rate corresponds to 5.5 % and the bank calculates the interest once a year. MAXIMIZE THE UTILITY!

(PLN 1,073,683.00)

14. How long do you have to wait to obtain CZC 8,200.00 if you put on your bank account CZC 4,561.00? Further, you know that the bank has two interest periods in one year and the **monthly** interest rate is 0.4 %.

MAXIMAMIZE THE UTILITY!

$(t_{compound} = 24.733478IPs, t_{combined} = 24,731158, \text{ i.e. cca } 12 \text{ years } 4 \text{ months and } 12 \text{ days})$