10^{th} Maths - Chapter 4

This is Problem-4 from Exercise 4.2

1. Find the two positive consecutive integers whosesquares sum is 365.
   Solution:
   Given Data:sum of the two numbers squares = 365
   Let, the positive integers be x nad x+1.
   So,According to the quetion.

$$(x)^2 + (x+1)^2 = 365 \tag{1}$$
$$x^2 + x^2 + 1 + 2x = 365 \tag{2}$$
$$2x^2 + 2x = 365 - 12(x^2 + x) = 364 \tag{3}$$
$$x^2 + x - 182 = 0 \tag{4}$$
$$\tag{5}$$

   By formula method of finding x we get,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{6}$$
$$x = \frac{-1 \pm \sqrt{1^2 - 4(1)(182)}}{2(1)} \tag{7}$$
$$x = \frac{-1 + \sqrt{1 - 728}}{2} \tag{8}$$
$$x = \frac{-1 + \sqrt{729}}{2} \tag{9}$$
$$x = \frac{-1 + 27}{2} x = \frac{26}{2} x = 13 \tag{10}$$
$$\tag{11}$$

   Now,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{12}$$

$$x = \frac{-1 \pm \sqrt{1^2 - 4(1)(182)}}{2(1)} \tag{13}$$

$$x = \frac{-1 - \sqrt{1 - 728}}{2} \tag{14}$$

$$x = \frac{-1 - \sqrt{729}}{2} \tag{15}$$

$$x = \frac{-1 - 27}{2} \tag{16}$$

$$x = -14 \tag{17}$$

$$\tag{18}$$

since,according to question we have to find positive integers;x=13 and x+1=13+1=14