**SOLVING QUADRATIC EQUATIONS BY FACTORING**



Solving equations by factoring depends on applying ***The Zero-Product Property***.



If a product is equal to zero, then one of the factors must equal zero.

If      A × B = 0 , then A = 0 or B = 0



example: Solve *x*2  +  2*x*  =  15 by factoring.

* + Write the equation so that one side is 0.



* + Factor the non-zero side.



* + Apply the Zero-Product Property.



* + Solve each simpler equation.



example: Solve 9*x*2  −  12*x*  +  4  =  0 by factoring.



exercise: Solve the following equations by factoring.



a) *x*2  =  5*x* b) 2*x*2  =  6  −  *x*



c) *x*2  +  *x*  −  1  =  0 Hint: multiply both sides to get rid of fraction!



Note how the roots of the equation correspond to the factors of the polynomial!



|  |  |
| --- | --- |
| root | factor |
| 3  −5 | *x* −  3  *x* +  5  3*x* −  2 |

The root *b* is from the factor \_\_\_\_\_\_\_\_\_\_



The root  is from the factor \_\_\_\_\_\_\_\_\_\_



exercise: Write a quadratic equation with the following roots.

Write the equation in standard form:



a) 7 and −5



b) 0 and 



exercise: A rectangular fishpond measures 6 metres by 9 metres. The pond has a walkway of uniform width around it. The area of the walkway is equal to the area of the pond. Determine the width of the walkway.

walkway

fishpond

walkway width