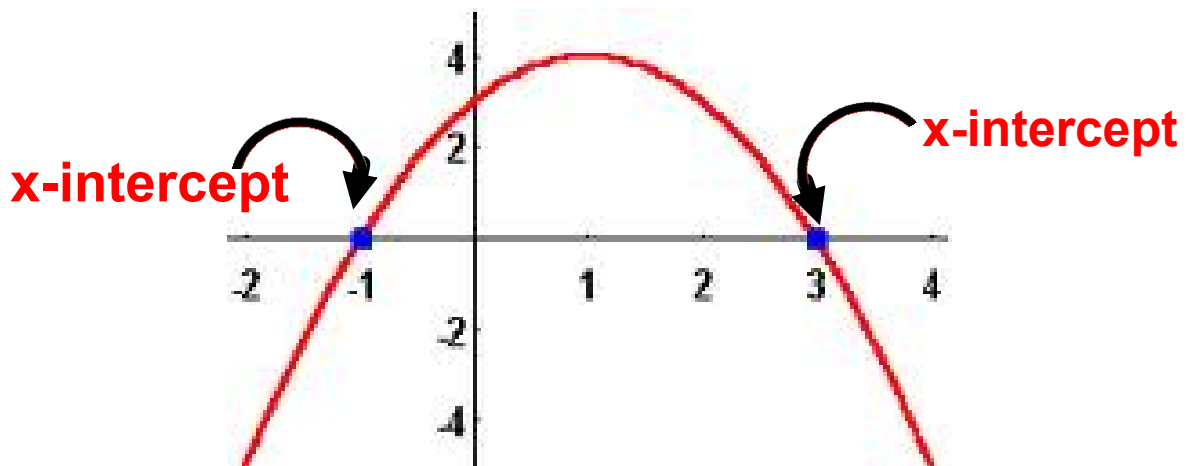


DETERMINING THE NUMBER OF X-INTERCEPTS USING a & q

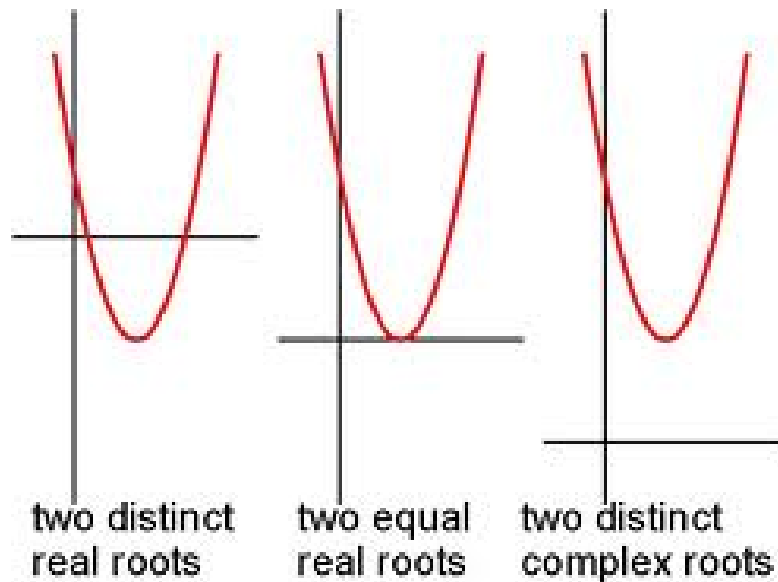
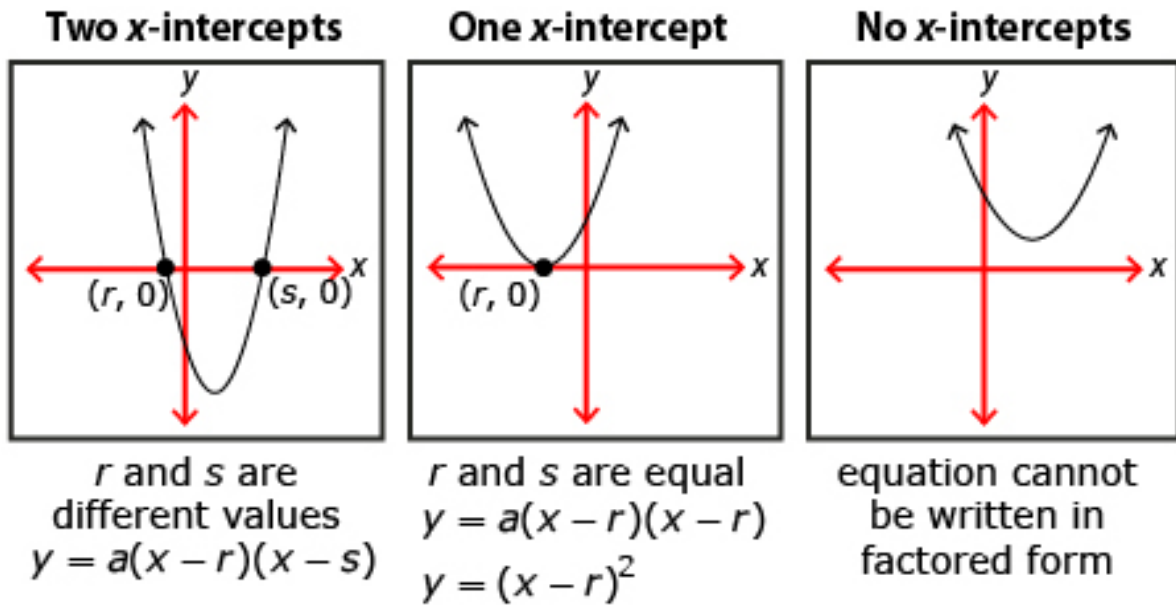
- You can determine the number of x-intercepts or roots if you know the location of the vertex and direction of opening.
- Visualize the general position and shape of the graph based on the values of " a " and " q ".

X-INTERCEPTS

x-intercepts are also sometimes called **roots**. And yet one more name for x-intercepts is **zeroes of a function** since the x-value of the intercept makes the function, $f(x)$, equal to 0.



Number of Roots

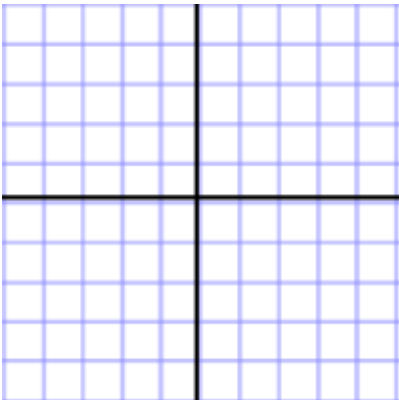


Number of Roots

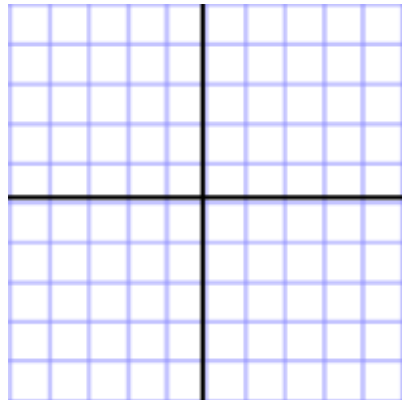
Determine the Number of x-Intercepts Using a and q

Determine the number of x-intercepts for each quadratic function.

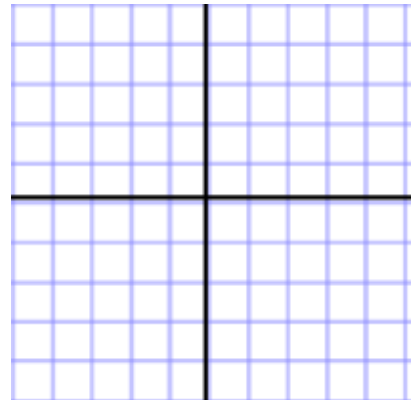
a) $f(x) = 0.8x^2 - 3$ b) $f(x) = 2(x - 1)^2$ c) $f(x) = -3(x + 2)^2 - 1$



?



?

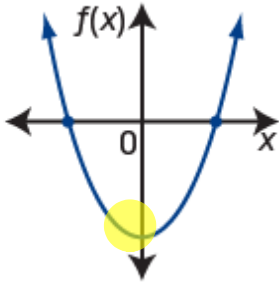
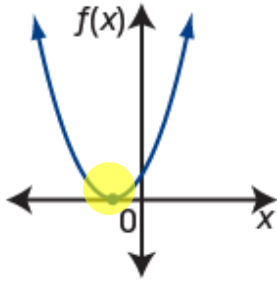
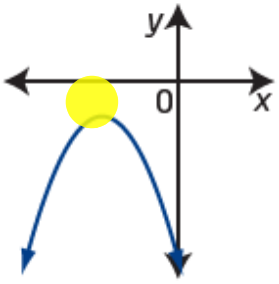


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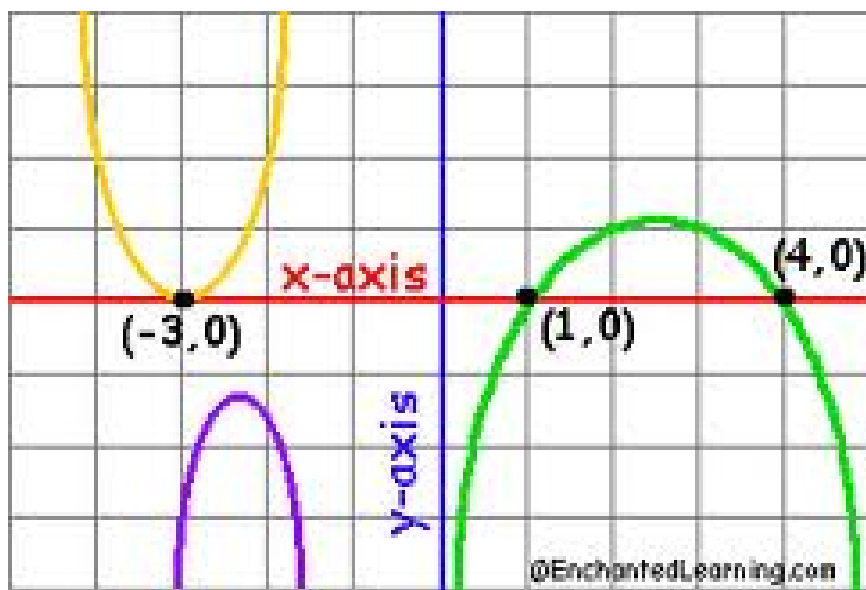
Sketch to determine the number of x-intercepts!

Number of Roots

Summary

Value of a	Value of q	Visualize the Graph	Number of x -Intercepts
$a > 0$ the graph opens upward	$q < 0$ the vertex is below the x -axis		<u>2</u> crosses the x -axis <i>twice</i> , since it opens <i>upward</i> from a vertex <i>below</i> the x -axis
$a > 0$ the graph opens upward	$q = 0$ the vertex is on the x -axis		<u>1</u> touches the x -axis <i>once</i> , since the vertex is <i>on</i> the x -axis
$a < 0$ the graph opens downward	$q < 0$ the vertex is below the x -axis		<u>0</u> does not cross the x -axis, since it opens <i>downward</i> from a vertex <i>below</i> the x -axis

Summary



More Practice

Determine the number of x -intercepts for each quadratic function without graphing.

a) $f(x) = 0.5x^2 - 7$ **b)** $f(x) = -2(x + 1)^2$ **c)** $f(x) = -\frac{1}{6}(x - 5)^2 - 11$





Assignment :

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Questions 11 & 12