

DO NOW

What are the roots?

Solutions

How do you find them on a graph?

x-intercepts

Page 1

8.4 Solving Quadratic Equations From A Graph

Roots - are x-values that make $y=0$

★ x-intercepts

We can solve a quadratic equation by:

1. Rewriting the equation replacing 0 with y.
2. Graph the parabola.
3. Identify the x-intercepts.

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3 cases:

1. Real and unequal roots
↳ crosses the x-axis at two distinct points
2. Real and equal roots (double root)
↳ crosses the x-axis at exactly one point.
3. No real roots
↳ NO x-intercepts

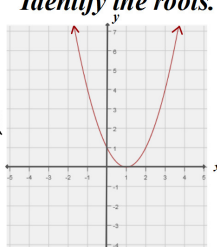
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Examples: Tell what type of root(s) the graphed function has. Identify the roots.

1.

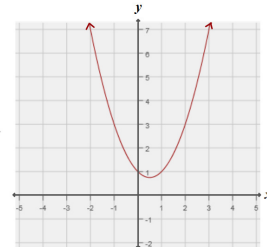
Real and equal roots.

$$x=1$$



2.

No real roots.

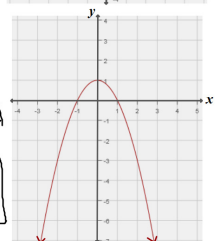


3.

Real and unequal roots

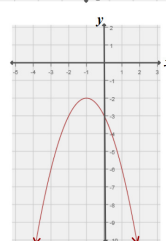
$$x=-1$$

$$x=1$$



4.

No real roots



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5. What is the largest root of: $x^2 + 6x - 7 = 0$

(DO NOT actually draw the graph.)

$$y = x^2 + 6x - 7$$

★ Look at the table
 $y=0 \rightarrow$ gives the roots

Roots: $x=1$ and $x=-7$

$$x=1$$

6. How many x-intercepts does the graph of this function have?

$$y = -x^2 - x - 5$$

no real roots

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Solve the quadratic equations by graphing. Identify the roots. Identify what type of roots the function has.

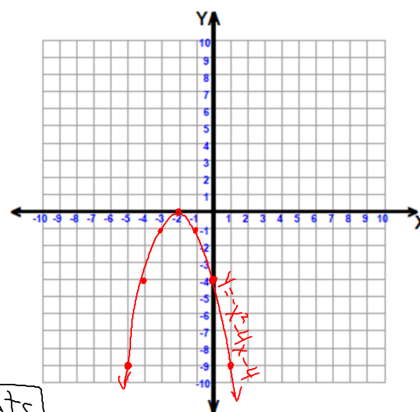
$$7. 0 = -x^2 - 4x - 4$$

$$y = -x^2 - 4x - 4$$

X	y
-5	-9
-4	-4
-3	-1
-2	0
-1	-1
0	-4
1	-9

$$\text{Root: } x = -2$$

real and equal roots



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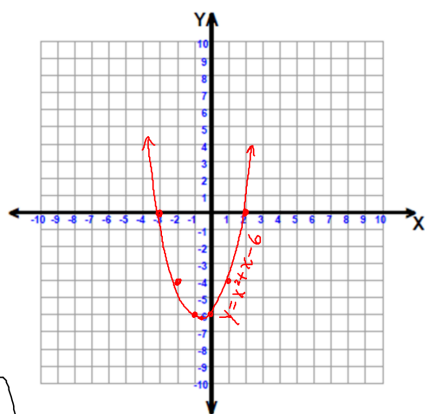
8. $0 = x^2 + x - 6$

$y = x^2 + x - 6$

x/y	
-3	0
-2	-4
-1	-6
-0.5	-6.25
0	-6
1	-4
2	0

Roots: $x = -3$
 $x = 2$

real and unequal
roots



HOMework

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