Algebra IA/IB (H)
Section 10.2: Solving Quadratic Equations by Graphing
Homework

Name: Answer Key
Period: **Date:**
Score: **/ 5 Points**

Solve each equation by graphing. If integral roots cannot be found, estimate the roots by stating the consecutive integers between which the roots lie.

1. $w^2 + 6w + 9 = 0$ $a = 1$ $b = 6$ $c = 9$

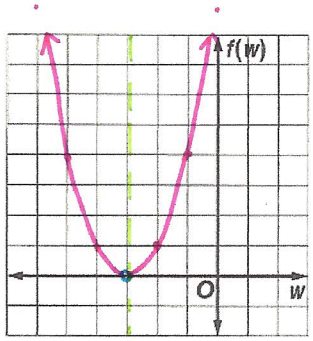
① Axis of Symmetry
$x = \frac{-b}{2a} = \frac{-(6)}{2(1)} = \frac{-6}{2} = -3$

② Vertex
$y = (-3)^2 + 6(-3) + 9$
$= 9 - 18 + 9 = 0$

③ Table of Values

x	y	
-2	1	$(-2)^2 + 6(-2) + 9 = 4 - 12 + 9 = 1$
-1	4	$(-1)^2 + 6(-1) + 9 = 1 - 6 + 9 = 4$
0	9	$(0)^2 + 6(0) + 9 = 9$

Axis of Symmetry: $x = -3$
Vertex: $(-3, 0)$
Maximum or Minimum?
Solution(s): -3



2. $2v^2 + 8v = -7$ $2v^2 + 8v + 7 = 0$

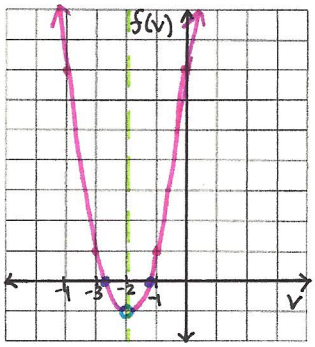
① Axis of Symmetry
$x = \frac{-b}{2a} = \frac{-(8)}{2(2)} = \frac{-8}{4} = -2$

② Vertex
$y = 2(-2)^2 + 8(-2) + 7$
$= 8 - 16 + 7 = -1$

③ Table of Values

x	y	
-1	1	$2(-1)^2 + 8(-1) + 7 = 2 - 8 + 7 = 1$
0	7	$2(0)^2 + 8(0) + 7 = 7$
1	17	$2(1)^2 + 8(1) + 7 = 2 + 8 + 7 = 17$

Axis of Symmetry: $x = -2$
Vertex: $(-2, -1)$
Maximum or Minimum?
Solution(s): Between
-3 and -2
-2 and -1



DESIGN. A footbridge is suspended from a parabolic support. The function $h(x) = -\frac{1}{25}x^2 + 9$ represents the height in feet of the support above the walkway, where $x = 0$ represents the midpoint of the bridge.

3. Graph the function and determine its *x*-intercepts. $a = -\frac{1}{25}$ $b = 0$ $c = 9$

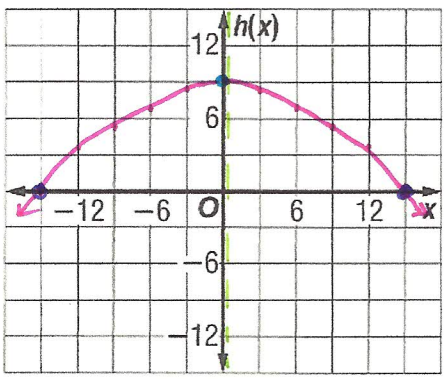
① Axis of Symmetry $x = 0$
$x = \frac{-b}{2a} = \frac{-(0)}{2(-\frac{1}{25})} = 0$

② Vertex $(0, 9)$
$h(x) = -\frac{1}{25}(0)^2 + 9$
$= 9$

③ Table of Values

x	y
3	8.64
6	7.56
9	5.76
12	3.24
15	0

$x = -15, 15$



4. What is the length of the walkway between the two supports?

$|-15| + |15| = 30$ feet

MENSA MIND TEASERS.

5. RUDE TAVERN is an anagram of what 10-letter word?

ADVENTURER

6. Tom beats Joe at pool but loses to Sue. Hilary usually wins against Joe, sometimes against Tom, but never against Sue. Who is the weakest player?

Joe