FIBO · LEARN, PRACTICE & EXPLORE MATH

Unit 9 · Quadratics & Advanced Algebra — Unit Test

16 questions · 16 points · full worked solutions inside

ANSWER KEY — TEACHERS & PARENTS

Name _____ Date _____

Class _____

Directions: This key shows a full worked solution for every question. Final answers are boxed.

1 **Solve: $x^2 + 2x - 15 = 0$. (Type both roots like 3,-5.)** [1 pt]

Solution.

$(x + 5)(x - 3) = 0$.

$\boxed{x = 3, -5}$

2 **What is the discriminant of $2x^2 - 8x + 8 = 0$?** [1 pt]

Solution.

$64 - 64 = 0$.

$\boxed{0}$

3 **What is the discriminant of $x^2 - 4x + 3 = 0$?** [1 pt]

Solution.

$16 - 12 = 4$ — two real roots.

$\boxed{4}$

4 **Solve with the formula: $x^2 - 3x - 10 = 0$. (Type both roots like 5,-2.)** [1 pt]

Solution.
$x = (3 \pm 7)/2 = 5, -2.$

x = 5, −2

5 **The quadratic formula is x =…** [1 pt]

Solution.
$x = (-b \pm \sqrt{(b^2 - 4ac)}) / 2a.$

(−b ± √(b²−4ac)) / 2a

6 **What is the vertex of $y = -(x + 4)^2 + 7$? (Type like -4,7.)** [1 pt]

Solution.
Vertex (−4, 7).

(−4, 7)

7 **Does $y = -2x^2 + 5$ open upward or downward? (Type one word.)** [1 pt]

Solution.
$a = -2 < 0 \rightarrow$ opens downward.

downward

8 **How many x-intercepts does $y = x^2 + 4$ have?** [1 pt]

Solution.
$x^2 = -4$ has no real solution.

0

9 **Evaluate: $\log_2(64)$.** [1 pt]

Solution.
$2^6 = 64$.

6

10 **Evaluate: $\log_5(125)$.** [1 pt]

Solution.
$5^3 = 125$.

3

11 **Which equals $2^3 \cdot 2^2$?** [1 pt]

Solution.
$2^3 \cdot 2^2 = 2^5 = 32$.

2^5

12 **Use the Remainder Theorem: what is the remainder of $(x^3 + 2x^2 - 5) \div (x + 1)$?** [1 pt]

Solution.
$(-1)^3 + 2(-1)^2 - 5 = -1 + 2 - 5 = -4$.

-4

13 **Divide: $(x^2 + 6x + 9) \div (x + 3)$. (Type like x+3.)** [1 pt]

Solution.
$(x + 3)^2 \div (x + 3) = x + 3$.

x+3

14 **What are the excluded values of $(x - 2)/(x^2 - 9)$? (Type like 3,-3.)** [1 pt]

Solution.
$x^2 = 9 \rightarrow x = \pm 3$.

3, −3

15 **Simplify: $(x^2 - 4)/(x - 2)$. (Type like x+2.)** [1 pt]

Solution.
$(x + 2)(x - 2)/(x - 2) = x + 2$.

x+2

16 **Add: 3/x + 2/x. (Type like 5/x.)** [1 pt]

Solution.
5/x.

5/x

Grade chart

Grade	Percent	Points (of 16)
A	90–100%	14.5–16 pts
B	80–89%	13–14 pts
C	70–79%	11.5–12.5 pts
D	60–69%	10–11 pts
F	Below 60%	below 10 pts