SHOW ALL WORK

$d = b^2 - 4ac$

Kuta Software - Infinite Algebra 2

Name_____

Date_____ Period____

## Understanding the Discriminant

**Find the value of the discriminant of each quadratic equation.**

1) $6p^2 - 2p - 3 = 0$

$a=6$ $b=-2$ $c=-3$

$d = 76$

2) $-2x^2 - x - 1 = 0$

3) $-4m^2 - 4m + 5 = 0$

$a=-4$ $b=-4$ $c=5$

$d = 96$

4) $5b^2 + b - 2 = 0$

5) $r^2 + 5r + 2 = 0$

$a=1$ $b=5$ $c=2$

$d = 17$

6) $2p^2 + 5p - 4 = 0$

**Find the discriminant of each quadratic equation then state the numberof real and imaginary solutions.**

7) $9n^2 - 3n - 8 = -10$ $9n^2 - 3n + 2 = 0$

$a=9$ $b=-3$ $c=2$

$d = -63$ 0 real roots

8) $-2x^2 - 8x - 14 = -6$

9) $9m^2 + 6m + 6 = 5$ $9m^2 + 6m + 1 = 0$

$a=9$ $b=6$ $c=1$

$d = 0$ 1 real root

10) $4a^2 = 8a - 4$

11) $-9b^2 = -8b + 8$ $-9b^2 + 8b - 8 = 0$

$a=-9$ $b=8$ $c=-8$

$d = -224$ 0 real roots

12) $-x^2 - 9 = 6x$

13) $-4r^2 - 4r = 6$ $4r^2 + 4r + 6 = 0$

$a=4$ $b=4$ $c=6$

$d = -80$ 0 real roots

14) $8b^2 - 6b + 3 = 5b^2$

15) $14a^2 - a = 5a^2 - 5a$ $9a^2 + 4a = 0$

$a=9$ $b=4$ $c=0$

$d = 16$ 2 real roots

16) $12v^2 - 6v + 1 = 3v^2$

17) $3m^2 - 5m = -8m + 2$ $3m^2 + 3m - 2 = 0$

$a=3$ $b=3$ $c=-2$

$d = 113$ 2 real roots

18) $6n^2 + n - 3 = 7 + 2n$

19) $6r^2 - 8r + 6 = 4r^2 - 2$ $2r^2 - 8r + 4 = 0$

$a=2$ $b=-8$ $c=4$

$d = 0$ 1 real root

20) $-x^2 - 2x - 7 = -6$

**Critical thinking questions:**

21) Write a quadratic equation that has two imaginary solutions.

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