

Solving Quadratics Quiz Review

*Ensure that you know the following formulas for our quiz as they will not be given out.

Think "Row, Row, Row Your Boat"*

$$\text{Quadratic Formula : } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \& \quad \text{The Discriminant: } D = b^2 - 4ac$$

Note: Equations need to be in standard form ($ax^2 + bx + c = 0$) to be able to use both of the above formulas.

****3 different methods for solving quadratics are solving by: Factoring, Quadratic Formula, Square Rooting****

1. Solve by factoring, $\in R$.

a) $x^2 + 3x - 40 = 0$

b) $x^2 - x = 12$

c) $y^2 = 12y - 36$

d) $t^2 = 16$

e) $4x^2 - 3 = 11x$

f) $3x^2 - 7x = 0$

g) $4r^2 + 9 = 12r$

h) $9x^2 - 17x + 8 = 0$

i) $9x^2 - 16 = 0$

2. Solve using the quadratic formula, $\in R$.

a) $4x^2 - 12x + 5 = 0$

b) $3y^2 + 5y = 28$

c) $3x^2 + 6x + 1 = 0$

d) $2x^2 + 6x = -3$

e) $x^2 + 2x + 2 = 0$

3. Solve using square roots, $\in R$.

a) $(x+3)^2 = 9$

b) $(x-10)^2 - 1 = 0$

c) $(s-1)^2 = 4$

d) $(y-4)^2 - 25 = 0$

e) $\left(x - \frac{1}{3}\right)^2 = \frac{1}{9}$

f) $\left(a + \frac{3}{4}\right)^2 = \frac{9}{16}$

g) $6x^2 - 18 = 0$

h) $3x^2 - 7 = 0$

4. Solve by any means necessary, $\in R$.

a) $9x^2 = -24x - 16$

b) $3x^2 - 3x = 1$

c) $2(x-3)^2 - 12 = 0$

d) $2x^2 = -5x$

e) $-3(x+4)^2 + 24 = 0$

f) $x^2 + 4 = -6x$

g) $x^2 - 4 = 3x$

5. For the following equations, determine the value of The Discriminant and state the Nature of the Real Roots. (Ensure that equations are written in standard form: $ax^2 + bx + c = 0$ prior to calculating the Discriminant.)

a) $-9x^2 = -8x + 8$

b) $4x^2 = 8x - 4$

c) $-6x^2 - 6 = -7x - 9$

ANSWERS: note: solution sets have been omitted – make sure you have them in your answer!

1.a) $-8, 5$ b) $4, -3$ c) 6 d) ± 4 e) $3, \frac{-1}{4}$ f) $0, \frac{7}{3}$ g) $\frac{3}{2}$ h) $1, \frac{8}{9}$ i) $\frac{\pm 4}{3}$

2.a) $\frac{5}{2}, \frac{1}{2}$ b) $\frac{7}{3}, -4$ c) $\frac{-3 \pm \sqrt{6}}{3}$ d) $\frac{-3 \pm \sqrt{3}}{2}$ e) no real solution

3.a) $0, -6$ b) $11, 9$ c) $3, -1$ d) $9, -1$ e) $0, \frac{2}{3}$ f) $0, \frac{-3}{2}$ g) $\pm \sqrt{3}$ h) $\frac{\pm \sqrt{21}}{3}$

4.a) $\frac{-4}{3}$ b) $\frac{3 \pm \sqrt{21}}{6}$ c) $3 \pm \sqrt{6}$ d) $0, \frac{-5}{2}$ e) $-4 \pm 2\sqrt{2}$ f) $-3 \pm \sqrt{5}$ g) $4, -1$

5a) $D = -224$; no real roots

5b) $D = 0$; 1 real, distinct root or 2 real, equal roots

5c) $D = 121$; 2 real, distinct roots