Unit VIII – Quadratic Equations
Part A – Solving Quadratic Equations of the form ax²+bx+c=0
Lesson 4 – Checking Solutions

For each of the following relations, find the discriminant and state the nature of the solutions. Then solve the equation and check the solutions by examining their sum and product.

1. $4x^2 - 20x + 25 = 0$

2. $9y^2 + 12y + 2 = 0$

3. $4n^2 + 4n - 3 = 0$

4. $1 = 8n - 4n^2$

5. $-t^2 + 6t - 10 = 0$

6. $9t^2 - 6t + 4 = 0$

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1. Discriminant $= 0$

   Two equal rational roots

   $x = \dfrac{5}{2}$

   Sum $= 5$

   Product $= \dfrac{25}{4}$

2. Discriminant $= 72$

   Non - perfect square > 0;

   Two different irrational roots

   $y = \dfrac{^-2 \pm \sqrt{2}}{3}$

   Sum $= \dfrac{^-4}{3}$

   Product $= \dfrac{2}{9}$

3. Discriminant $= 64$

   Perfect square > 0;

   Two different rational roots

   $n = \dfrac{1}{2}, \dfrac{^-3}{2}$

   Sum $= {}^-1$

   Product $= \dfrac{^-3}{4}$

4. Discriminant $= 48$

   Non - perfect square > 0;

   Two different irrational roots

   $n = \dfrac{2 \mp \sqrt{3}}{2}$ or $\dfrac{^-2 \pm \sqrt{3}}{^-2}$

   Sum $= 2$

   Product $= \dfrac{1}{4}$

5. Discriminant $= {}^-4$

   Two different complex roots

   $t = 3 - i, 3 + i$

   Sum $= 6$

   Product $= 10$

6. Discriminant $= {}^-108$

   Two different complex roots

   $t = \dfrac{^-1 + i\sqrt{3}}{3}, \dfrac{^-1 - i\sqrt{3}}{3}$

   Sum $= \dfrac{^-2}{3}$

   Product $= \dfrac{4}{9}$