

# ۲. آمیزش‌های نام نوشتنی!

| <p>نام و نام خانوادگی: ..... آزمون تشریحی تکلیف شماره ۱ ..... کلاس: یازدهم دبیرستان</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <p>الف) <math>4x^2 - 5x - 4 = 0 \rightarrow x^2 - 5x - 4 = 0 \rightarrow (x-9)(x+4) = 0 \rightarrow x = 9</math><br/> <math>\rightarrow x = \frac{9}{4} = \frac{9}{4}</math><br/>         ب) <math>3x^2 - 8x - 3 = 0 \rightarrow x^2 - 8x - 9 = 0 \xrightarrow{a+c=b} \frac{-1}{9} \rightarrow x = \frac{-1}{9}</math><br/> <math>\rightarrow x = \frac{-1}{9}</math><br/>         ج) <math>2x^2 - 4x - 3 = 0 \rightarrow x^2 - 2x - 1.5 = 0 \rightarrow (x-4)(x+2) = 0 \rightarrow x = \frac{4}{2} = 2</math><br/> <math>\rightarrow x = \frac{4}{2} = 2</math><br/>         د) <math>2x^2 - 5x - 12 = 0 \rightarrow x^2 - 5x - 6 = 0 \rightarrow (x-1)(x+3) = 0 \rightarrow x = \frac{1}{2} = \frac{1}{2}</math><br/> <math>\rightarrow x = \frac{1}{2} = \frac{1}{2}</math></p> | ۱ |
| <p>الف) <math>x^2 - 5x - 14 = 0 \rightarrow (x-7)(x+2) = 0 \rightarrow x = \frac{-2}{1} = -2</math><br/> <math>\rightarrow x = \frac{-2}{1} = -2</math><br/>         ب) <math>2x^2 + 5x + 3 = 0 \rightarrow x^2 + 5x + 4 = 0 \rightarrow (x+3)(x+1) = 0 \rightarrow x = \frac{3}{2} = \frac{3}{2}</math><br/> <math>\rightarrow x = \frac{3}{2} = \frac{3}{2}</math><br/>         ج) <math>x^2 + 2x + 3 = 0 \xrightarrow{\Delta} x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \Delta = b^2 - 4ac = 4 - 12 = -8 \rightarrow \Delta &lt; 0</math><br/> <math>\rightarrow \Delta &lt; 0</math><br/>         د) <math>3x^2 + 3x - 2 = 0 \xrightarrow{\Delta} x = \frac{-3 \pm \sqrt{33}}{6}</math><br/> <math>\rightarrow x = \frac{-3 \pm \sqrt{33}}{6}</math></p>                 | ۲ |
| <p><math>A = \{1, 2, 3\}</math><br/> <math>B = \{2, 3\}</math><br/> <math>A \times B = \{(1, 2), (1, 3), (2, 2), (2, 3), (3, 2), (3, 3)\}</math><br/> <math>B^2 = B \times B = \{(2, 2), (2, 3), (3, 2), (3, 3)\}</math><br/> <math>A \times B - B^2 = \{(1, 2), (1, 3)\}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ۳ |
| <p>الف) <math>f(n) = \{(3, m^2), (2, 1), (-3, m), (-2, m), (3, m+2), (m, 2)\}</math><br/> <math>m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow (m-2)(m+1) = 0 \rightarrow m = -1</math><br/> <math>\rightarrow m = -1</math><br/>         ب) <math>g(n) = \{(3, m^2), (2, 1), (m, 2), (3, m+2), (-2, m), (-1, 3)\}</math><br/> <math>m^2 = m+2 \rightarrow m^2 - m - 2 = 0 \rightarrow m = -1</math><br/> <math>\rightarrow m = -1</math></p>                                                                                                                                                                                                                                                                                                                                   | ۴ |
| <p><math>f(n) = \{(1, a^2), (1, 3a-2), (a^2, 3a+2)\}</math><br/> <math>a^2 = 3a-2 \rightarrow a^2 - 3a + 2 = 0 \rightarrow (a-1)(a-2) = 0 \rightarrow a = 1</math><br/> <math>\rightarrow a = 1</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ۵ |

$$f(n) = \begin{cases} n^2 - 1; n \leq 1 & \text{if } n=1 \rightarrow n^2 - 1 = a \cdot n + b \xrightarrow{n=1} (a+b=0) \\ a \cdot n + b, 1 \leq n \leq r & \text{if } n=r \rightarrow a \cdot n + b = n^2 \xrightarrow{n=r} \begin{cases} 2a+b=1 \\ a=1 \\ b=-1 \end{cases} \\ n^2, n \geq r \end{cases}$$

$$a \times b = -1$$

$$f(n) = \begin{cases} 2n-3, n \geq k \\ r-3n, n \leq k \end{cases}$$

$$\text{if } n=k \rightarrow 2n-3 = r-3n$$

$$\Delta n = 5 \rightarrow n = \frac{5}{2}$$

$$\text{الف) } y^3 - 4y = n^2 - 2n + 3 \xrightarrow{\text{if } n=1} y^3 - 4y = 0 \rightarrow y(y^2 - 4) = 0 \rightarrow y = \sqrt{4}$$

$$\text{ب) } |x| + |y| = 3 \xrightarrow{\text{if } n=0} |y| = 3 \rightarrow y = 3 \text{ or } y = -3$$

$$\text{ج) } |y| = \sqrt{1 - \cos n} \xrightarrow{\text{if } n = \frac{\pi}{2} \text{ or } \frac{3\pi}{2}} |y| = \sqrt{1} \rightarrow y = \pm 1$$

$$\text{د) } y^2 + n^2 + 2n + 1 = 0 \rightarrow y^2 + (n+1)^2 = 0 \rightarrow y^2 = 0 \rightarrow y = 0 \text{ or } (n+1)^2 = 0 \rightarrow n = -1$$

$$\text{الف) } \sqrt[3]{y} + n^2 = 2n - 2 \rightarrow \begin{cases} \sqrt[3]{y_1} = -n_1^2 + 2n_1 - 2 \\ \sqrt[3]{y_2} = -n_2^2 + 2n_2 - 2 \end{cases} \xrightarrow{n_1=n_2} \sqrt[3]{y_1} = \sqrt[3]{y_2} \rightarrow y_1 = y_2$$

$$\text{ب) } y^2 + 2y = \Delta n \rightarrow \begin{cases} y_1^2 + 2y_1 = \Delta n_1 \\ y_2^2 + 2y_2 = \Delta n_2 \end{cases} \xrightarrow{n_1=n_2} y_1^2 + 2y_1 = y_2^2 + 2y_2 \rightarrow y_1^2 - y_2^2 + 2y_1 - 2y_2 = 0$$

$$\text{الف) } n \sin n = y \sin n$$

$$\text{if } n=0 \rightarrow y \sin 0 = 0 \rightarrow y \in \mathbb{R}$$

$$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2 + 2) = 0 \rightarrow y_1 = y_2$$

$$\text{ب) } \sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} = 2 \xrightarrow{(\frac{x}{y})^2} \frac{x}{y} + \frac{y}{x} + 2 = 2 \rightarrow \frac{x^2 + y^2}{xy} = 2$$

$$x^2 + y^2 = 2xy \rightarrow x^2 + y^2 - 2xy = 0$$

$$(x-y)^2 = 0 \rightarrow x = y$$

$$\sqrt{\frac{x}{y}} = 1 \rightarrow \sqrt{\frac{y}{x}} = 1 \rightarrow x = y$$