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| <p>الف) <math>x^2 - 2x + 1 = 0</math><br/> <math>\Rightarrow x^2 - 2x = -1</math><br/> <math>x^2 - 2x + 1 = 0</math><br/> <math>(x-1)^2 = 0</math><br/> <math>(x-1) = \pm 1 \Rightarrow \underline{x=2} \text{ و } \underline{x=0}</math></p> | <p>ب) <math>x^2 + 1x + 1 = 0</math><br/> <math>x^2 + 1x = -1</math><br/> <math>x^2 + 1x + 1/4 = 9/4</math><br/> <math>(x+1/2)^2 = 9/4</math><br/> <math>(x+1/2) = \pm 3/2 \Rightarrow \underline{x=-1} \text{ و } \underline{x=2}</math><br/> <math>x = 3/2 - 1/2, x = -3/2 - 1/2</math></p> | ۱ |
| <p>الف) <math>x^2 - 5x + 4 = 0</math><br/> <math>(x-1)(x-4) = 0</math><br/> <math>\begin{cases} x-1=0 \\ x-4=0 \end{cases} \Rightarrow \underline{x=1} \text{ و } \underline{x=4}</math></p>                                                  | <p>ب) <math>x^2 - 5x - 14 = 0</math><br/> <math>(x-7)(x+2) = 0</math><br/> <math>\begin{cases} x-7=0 \\ x+2=0 \end{cases} \Rightarrow \underline{x=7} \text{ و } \underline{x=-2}</math></p>                                                                                                 | ۲ |
| <p>الف) <math>x^2 - 3x - 8 = 0</math><br/> <math>\Delta = b^2 - 4ac = 9 + 32 = 41</math><br/> <math>x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{3 \pm \sqrt{41}}{2}</math></p>                                                                | <p>ب) <math>2x^2 - 8x + 6 = 0</math><br/> <math>\Delta = b^2 - 4ac = 64 - 48 = 16</math><br/> <math>x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{4 \pm \sqrt{16}}{4} = \frac{4 \pm 4}{4}</math></p>                                                                                           | ۳ |
| <p>الف) <math>x^2 - 3x + 2 = 0</math><br/> <math>(x-1)(x-2) = 0</math><br/> <math>\begin{cases} x-1=0 \\ x-2=0 \end{cases} \Rightarrow \underline{x=1} \text{ و } \underline{x=2}</math></p>                                                  | <p>ب) <math>x^2 + x - 2 = 0</math><br/> <math>x^2 + x - 2 = 0</math><br/> <math>(x-1)(x+2) = 0</math><br/> <math>\begin{cases} x-1=0 \\ x+2=0 \end{cases} \Rightarrow \underline{x=1} \text{ و } \underline{x=-2}</math></p>                                                                 | ۴ |
| <p>الف) <math>x^2 - 12x + 36 = 0</math><br/> <math>x^2 - 12x + 36 = 0</math><br/> <math>(x-6)(x-6) = 0</math><br/> <math>\begin{cases} x-6=0 \\ x-6=0 \end{cases} \Rightarrow \underline{x=6} \text{ و } \underline{x=6}</math></p>           | <p>ب) <math>3x^2 - 10x + 3 = 0</math><br/> <math>x^2 - 10/3x + 1 = 0</math><br/> <math>(x-3)(x-1/3) = 0</math><br/> <math>\begin{cases} x-3=0 \\ x-1/3=0 \end{cases} \Rightarrow \underline{x=3} \text{ و } \underline{x=1/3}</math></p>                                                     | ۵ |

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| <p>الف) <math>2u^2 + 5u - 1 = 0</math><br/> <math>\Delta = b^2 - 4ac = 25 - 12 = 13</math><br/> <math>\Delta = 13 &gt; 0 \Rightarrow</math> جواب دارد <math>\Rightarrow</math> ۲</p>                                                                                                                    | <p>ب) <math>2u^2 - u + 2 = 0</math><br/> <math>\Delta = b^2 - 4ac = 1 - 16 = -15</math><br/> <math>\Delta = -15 &lt; 0 \Rightarrow</math> جواب ندارد</p>                                                                           |
| <p>ب) <math>2u^2 - 5u + 2 = 0</math><br/> <math>\Delta = b^2 - 4ac = 25 - 16 = 9</math><br/> <math>\Delta = 9 &gt; 0 \Rightarrow</math> جواب دارد <math>\Rightarrow</math> ۲</p>                                                                                                                        | <p>ت) <math>2u^2 - u + 1 = 0</math><br/> <math>\Delta = b^2 - 4ac = 1 - 8 = -7</math><br/> <math>\Delta = -7 &lt; 0 \Rightarrow</math> جواب ندارد</p>                                                                              |
| <p>الف) <math>2u^2 - 2u + a = 0</math><br/> <math>\Delta = b^2 - 4ac = 4 - 8a &gt; 0</math><br/> <math>4 &gt; 8a \Rightarrow \boxed{a &lt; \frac{1}{2}}</math></p> <p>ج) <math>2u^2 - 2u + a = 0</math><br/> <math>\Delta = b^2 - 4ac = 4 - 8a \leq 0 \Rightarrow \boxed{a \geq \frac{1}{2}}</math></p> | <p>ب) <math>2u^2 - 2u + a = 0</math><br/> <math>\Delta = 4 - 8a = 0 \Rightarrow \boxed{a = \frac{1}{2}}</math></p> <p>د) <math>2u^2 - 2u + a = 0</math><br/> <math>\Delta \geq 0 \Rightarrow \boxed{a \leq \frac{1}{2}}</math></p> |
| <p>الف) <math>y = x^2 + 4x + 5</math><br/> <math>\Delta = 16 - 20 = -4</math><br/> <math>\Delta &lt; 0</math> همیشه دارد</p> <p>ب) <math>y = (x-2)^2 - 4</math><br/> <math>\Delta = 16 - 20 = -4</math><br/> <math>\Delta &lt; 0</math> همیشه دارد</p>                                                  | <p>ب) <math>y = (x-2)^2 - 4</math><br/> <math>\Delta = 16 - 20 = -4</math><br/> <math>\Delta &lt; 0</math> همیشه دارد</p>                                                                                                          |
| <p>الف) <math>y = -x^2 + 4x - 3</math><br/> <math>\Delta = 16 - 12 = 4</math><br/> <math>\Delta &gt; 0</math> همیشه دارد</p> <p>ب) <math>y = -(x-2)^2 + 1</math><br/> <math>\Delta = 16 - 12 = 4</math><br/> <math>\Delta &gt; 0</math> همیشه دارد</p>                                                  | <p>ب) <math>y = -(x-2)^2 + 1</math><br/> <math>\Delta = 16 - 12 = 4</math><br/> <math>\Delta &gt; 0</math> همیشه دارد</p>                                                                                                          |
| <p>الف) <math>s = -\frac{b}{a} = 2</math> <math>p = \frac{c}{a} = -3 \Rightarrow s^2 - 2p = 4 + 6 = 10</math></p>                                                                                                                                                                                       |                                                                                                                                                                                                                                    |
| <p>ب) <math>2v - 3(3x - 2) = 45</math></p>                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                    |