

18.-

a) $x^2 - 5x = 0$
 $a=1$ $x(x-5)=0$
 $b=-5$ $x=0$ $x-5=0$
 $c=0$ $x=5$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{5 \pm \sqrt{25-0}}{2}$$
$$= \frac{5 \pm 5}{2} \begin{cases} \frac{5+5}{2} = \frac{10}{2} = 5 \\ \frac{5-5}{2} = \frac{0}{2} = 0 \end{cases}$$

b) $2x^2 - 6x = 0$
 $a=2$ $x(2x-6)=0$
 $b=-6$ $x=0$
 $c=0$ $2x-6=0$ $2x=6$
 $x = \frac{6}{2} = 3$

$$x = \frac{6 \pm \sqrt{36-0}}{4} = \frac{6 \pm 6}{4} \begin{cases} \frac{6+6}{4} = \frac{12}{4} = 3 \\ \frac{6-6}{4} = \frac{0}{4} = 0 \end{cases}$$

c) $x^2 - 25 = 0$
 $a=1$ $x^2 = 25$
 $b=0$ $x = \pm \sqrt{25}$
 $c=-25$ $x=5$
 $x=-5$

$$x = \frac{0 \pm \sqrt{0 - 4 \cdot 1 \cdot (-25)}}{2 \cdot 1} = \frac{0 \pm \sqrt{100}}{2}$$
$$= \frac{0 \pm 10}{2} \begin{cases} \frac{10}{2} = 5 \\ \frac{-10}{2} = -5 \end{cases}$$

e) $12x^2 - 3x = 0$
 $a=12$ $x(12x-3)=0$
 $b=-3$ $x=0$
 $c=0$ $12x-3=0$ $12x=3$
 $x = \frac{3}{12} = \frac{1}{4}$

$$x = \frac{3 \pm \sqrt{9-0}}{24} = \frac{3 \pm 3}{24} \begin{cases} \frac{3-3}{24} = 0 \\ \frac{3+3}{24} = \frac{6}{24} = \frac{1}{4} \end{cases}$$

f) $4x^2 = x$
 $a=4$ $4x^2 - x = 0$
 $b=-1$ $x(4x-1) = 0$
 $c=0$

$x=0$
 $4x-1=0$
 $4x=1$ $x=\frac{1}{4}$

$$x = \frac{1 \pm \sqrt{1-0}}{2} = \frac{1 \pm 1}{2} = \begin{cases} \frac{1+1}{2} = \frac{2}{2} = 1 \\ \frac{1-1}{2} = \frac{0}{2} = 0 \end{cases}$$

g) $2x^2 + 3x = -5x$
 $a=2$ $2x^2 + 3x + 5x = 0$
 $b=8$ $2x^2 + 8x = 0$
 $c=0$ $x(2x+8) = 0$

$x=0$
 $2x+8=0$ $2x=-8$
 $x=-4$

$$x = \frac{-8 \pm \sqrt{64-0}}{4} = \frac{-8 \pm 8}{4} = \begin{cases} 0 \\ -4 \end{cases}$$

h) $7x^2 - x = 2x - x^2$
 $a=8$ $8x^2 - 3x = 0$
 $b=-3$ $x(8x-3) = 0$
 $c=0$ $x=0$ $8x-3=0$
 $8x=3$
 $x=\frac{3}{8}$

$$x = \frac{3 \pm \sqrt{9-0}}{16} = \begin{cases} \frac{3+3}{16} = \frac{6}{16} = \frac{3}{8} \\ \frac{3-3}{16} = \frac{0}{16} = 0 \end{cases}$$

i) $3x - 6x^2 = 2x^2 - 5x$
 $-8x^2 + 8x = 0$
 $a=-8$ $x(-8x+8) = 0$
 $b=8$ $x=0$ $-8x+8=0$
 $c=0$ $-8x=-8$
 $x=1$

$$x = \frac{-8 \pm \sqrt{64-0}}{-16} = \frac{-8 \pm 8}{-16} = \begin{cases} \frac{-8+8}{-16} = \frac{0}{-16} = 0 \\ \frac{-8-8}{-16} = \frac{-16}{-16} = 1 \end{cases}$$