9.5

1) $2, 5$

$x = 2, \quad x = 5$

$\underline{-2 \ -2 - 5 \ -5}$

$x - 2 = 0 \ x - 5 = 0$

$(x - 2)(x - 5) = 0$

$x^2 - 5x - 2x + 10 = 0$

$x^2 - 7x + 10 = 0$

3) $20, 2$

$x = 20 \quad x = 2$

$\underline{-20 - 20 - 2 \ -2}$

$x - 20 = 0 \, x - 2 = 0$

$(x - 20)(x - 2) = 0$

$x^2 - 20x - 2x + 40 = 0$

$x^2 - 22x + 40 = 0$

5) $4, 4$

$x = 4 \quad x = 4$

$\underline{-4 - 4 \ -4 - 4}$

$x - 4 = 0 \ x - 4 = 0$

$(x - 4)(x - 4) = 0$

$x^2 - 4x - 4x + 16 = 0$

$x^2 - 8x + 16 = 0$

7) $0, 0$

$x = 0, x = 0$

$xx = 0$

$x^2 = 0$

9) $-4, 11$

$x = -4 \quad x = 11$

$\underline{+4 \ +4 \quad -11 - 11}$

$x + 4 = 0 \, x - 11 = 0$

$(x + 4)(x - 11) = 0$

$x^2 + 4x - 11x - 44 = 0$

$x^2 - 7x - 44 = 0$

11) $\frac{3}{4}, \frac{1}{4}$

$4(x) = \left(\frac{3}{4}\right)4 \ , 4(x) = \left(\frac{1}{4}\right)4$

$4x = 3 \quad 4x = 1$

$\underline{-3 \ -3 \quad -1 \ -1}$

$4x - 3 = 0 \ 4x - 1 = 0$

$(4x - 3)(4x - 1) = 0$

$16x^2 - 12x - 4x + 3 = 0$

$16x^2 - 8x + 3 = 0$

13) $\frac{1}{2} \ , \ \frac{1}{3}$

$(2)x = \frac{1}{2}(2) \quad (3)x = \frac{1}{3}(3)$

$2x = 1 \quad 3x = 1$

$\underline{-1 \ -1} \quad \underline{-1 \ -1}$

$2x - 1 = 0 \ 3x - 1 = 0$

$(2x - 1)(3x - 1) = 0$

$6x^2 - 3x - 2x + 1 = 0$

$6x^2 - 5x + 1 = 0$

15) $\frac{3}{7} \ , \ 4$

$(7)x = \frac{3}{7}(x) \ \ x = 4$

$7x = 3 \quad \underline{-4 \ -4}$

$\underline{-3 \ -3} \quad x - 4 = 0$

$7x - 3 = 0$

$(7x - 3)(x - 4) = 0$

$7x^2 - 3x - 28x + 12 = 0$

$7x^2 - 31x + 12 = 0$

17) $-\frac{1}{3}, \frac{5}{6}$

$(3)x = -\frac{1}{3}(3) \ \ 6(x) = \frac{5}{6}(6)$

$3x = -1 \quad 6x = 5$

$\underline{+1 \ \ +1} \quad \underline{-5 \ \ -5}$

$3x + 1 = 0 \quad 6x - 5 = 0$

$(3x + 1)(6x - 5) = 0$

$18x^2 + 6x - 15x - 5 = 0$

$18x^2 - 9x - 5 = 0$

19) $-6, \quad \frac{1}{9}$

$x = -6 \quad (9)x = \frac{1}{9}(9)$

$\underline{+6 \ +6} \quad 9x = 1$

$x + 6 = 0 \ \underline{-1 \ \ -1}$

$9x - 1 = 0$

$(x + 6)(9x - 1) = 0$

$9x^2 + 54x - x - 6 = 0$

$9x^2 - 53x - 6 = 0$

21) ± 5

$x^2 = (\pm 5)^2$

$x^2 = 25$

$\underline{-25 - 25}$

$x^2 - 25 = 0$

23) $\pm \frac{1}{5}$

$x^2 = \left(\pm \frac{1}{5}\right)^2$

$(25)x^2 = \frac{1}{25}(25)$

$25x^2 = 1$

$\underline{-1 \quad -1}$

$25x^2 - 1 = 0$

25) $\pm\sqrt{11}$

$x^2 = \left(\pm\sqrt{11}\right)^2$

$x^2 = 11$

$-11 \quad -11$

$x^2 - 11 = 0$

27) $\pm\frac{\sqrt{3}}{4}$

$4x = \pm\frac{\sqrt{3}}{4}\,(4)$

$(4x)^2 = \left(\pm\sqrt{3}\right)^2$

$16x^2 = 3$

$-3 \quad -3$

$16x^2 - 3 = 0$

29) $\pm i\sqrt{13}$

$x^2 = \left(\pm i\sqrt{13}\right)^2$

$x^2 = -13$

$+13 \; +13$

$x^2 + 13 = 0$

31) $2 \pm \sqrt{6}$

$x = 2 \pm \sqrt{6}$

$-2 - 2$

$(x-2)^2 = \left(\pm\sqrt{6}\right)^2$

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

$\quad\quad\quad -6 \; -6$

$x^2 - 4x - 2 = 0$

33) $1 \pm 3i$

$x = 1 \pm 3i$

$-1 - 1$

$(x-1)^2 = (\pm 3i)^2$

$x^2 - 2x + 1 = -9$

$\quad\quad\quad +9 \quad +9$

$x^2 - 2x + 10 = 0$

35) $6 \pm i\sqrt{3}$

$x = 6 \pm i\sqrt{3}$

$-6 - 6$

$(x-6)^2 = \left(\pm i\sqrt{3}\right)^2$

$x^2 - 12x + 36 = -3$

$\quad\quad\quad\quad +3 \quad\; +3$

$x^2 - 12x + 39 = 0$

37) $\frac{-1\pm\sqrt{6}}{2}$

$(2)x = \frac{-1\pm\sqrt{6}}{2}(2)$

$2x = -1 \pm \sqrt{6}$

$+1 \quad +1$

$(2x+1)^2 = \left(\pm\sqrt{6}\right)^2$

$4x^2 + 4x + 1 = 6$

$\quad\quad\quad\quad -6 \; -6$

$4x^2 + 4x - 5 = 0$

39) $\frac{6\pm i\sqrt{2}}{8}$

$(8)x = \frac{6\pm i\sqrt{2}}{8}(8)$

$8x = 6 \pm i\sqrt{2}$

$-6 \quad -6$

$(8x-6)^2 = \left(\pm i\sqrt{2}\right)^2$

$64x^2 - 96x + 36 = -2$

$\quad\quad\quad\quad\quad +2 \quad +2$

$64x^2 - 96x + 38 = 0$