Algebra 2

F IIII
QF IIII
CS IIII

Name Key

Best Methods

Date _____ Period ____

Solve each equation by either factoring, completing the square, or quadratic formula. You MUST do 4 of each method. You should consider which method suits the problem the best.

1) $2n^2 - 4n - 12 = -7$

$2n^2-4n-5=0$

$X = \frac{4 \pm \sqrt{(-4)^2 - 4(2)(-5)}}{2(2)}$

$= \frac{4 \pm \sqrt{56}}{4}$

$= \frac{4 \pm 2\sqrt{14}}{4}$

$\boxed{X = \frac{2 \pm \sqrt{14}}{2}}$

2) $2a^2 - 4a - 47 = -9$

$2a^2-4a-38=0$

$2(a^2-2a-19)=0$

$X = \frac{2 \pm \sqrt{(-2)^2 - 4(1)(-19)}}{2(1)}$

$= \frac{2 \pm \sqrt{80}}{2}$

$= \frac{2 \pm 4\sqrt{5}}{2}$

$\boxed{X = 1 \pm 2\sqrt{5}}$

3) $m^2 - 4m = 21$

$m^2-4m-21=0$

$(m-7)(m+3)=0$

$\boxed{m = 7, -3}$

4) $k^2 + 4k - 56 = 10$

$+56 \quad +56$

$k^2+4k=66$

$k^2+4k+4=66+4$

$\sqrt{(k+2)^2} = \sqrt{70}$

$k+2 = \pm\sqrt{70}$

$-2 \quad -2$

$\boxed{k = -2 \pm \sqrt{70}}$

5) $7n^2 = -30n - 8$

$7n^2+30n+8=0$

$7n^2+28n+2n+8=0$

$7n(n+4)\ 2(n+4)$

$(7n+2)(n+4)=0$

$\boxed{n = -\frac{2}{7}, -4}$

6) $x^2 - 8x - 55 = -10$

$x^2-8x=45$

$x^2-8x+16=45+16$

$\sqrt{(x-4)^2} = \sqrt{61}$

$x-4 = \pm\sqrt{61}$

$+4 \quad +4$

$\boxed{X = 4 \pm \sqrt{61}}$

7) $4x^2 + 4x - 4 = -8$

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

$x = \frac{-4 \pm \sqrt{(4)^2-4(4)(4)}}{2(4)}$

$= \frac{-4 \pm \sqrt{-48}}{8}$

$= \frac{-4 \pm 4i\sqrt{3}}{8}$

$\boxed{x = \frac{-1 \pm i\sqrt{3}}{2}}$

8) $10r^2 - 20r - 88 = -8$

$10r^2 - 20r = 80$

$10(r^2-2r) = 80$

$10(r^2-2r+1) = 80+10$

$\frac{10(r-1)^2}{10} = \frac{90}{10}$

$\sqrt{(r-1)^2} = \sqrt{9}$

$r-1 = \pm 3$

$+1 \quad +1$

$\boxed{r = 4, -2}$

9) $6v^2 - 12v - 147 = -3$

$6v^2-12v = 144$

$6(v^2-2v) = 144$

$6(v^2-2v+1) = 144+6$

$\frac{6(v-1)^2}{6} = \frac{150}{6}$

$\sqrt{(v-1)^2} = \sqrt{25}$

$v-1 = \pm 5$

$+1 \quad +1$

$\boxed{v = 6, -4}$

10) $3p^2 = -5 + 8p$

$3p^2-8p+5=0$

$3p^2-5p-3p+5$

$p(3p-5)-1(3p-5)$

$(3p-5)(p-1)=0$

$\boxed{p = \frac{5}{3}, 1}$

11) $x^2 + x = -2$

$x^2+x+2=0$

$x = \frac{-1 \pm \sqrt{(1)^2-4(1)(2)}}{2(1)}$

$= \frac{-1 \pm \sqrt{-7}}{2}$

$\boxed{x = \frac{-1 \pm i\sqrt{7}}{2}}$

12) $k^2 - 20 = k$

$k^2-k-20=0$

$(k-5)(k+4)=0$

$\boxed{k = 5, -4}$