Algebra 2

Name Key

Date _____ Hour ____

Quadratic Review #2

Solve each equation by factoring.

1) $b^2 + 4 = -5b$

$b^2+5b+4=0$

$(b+4)(b+1)=0$

$\boxed{b=-4,-1}$

2) $n^2 - 12 = n$

$n^2-n-12=0$

$(n-4)(n+3)=0$

$\boxed{n=4,-3}$

3) $n^2 + 10 = 7n$

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

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

$\boxed{n=5,2}$

Solve each equation by completing the square.

4) $b^2 - 10b - 73 = -7$

$b^2-10b=66$

$b^2-10b+25=66+25$

$\sqrt{(b-5)^2}=\sqrt{91}$

$b-5=\pm\sqrt{91}$

$\boxed{b=5\pm\sqrt{91}}$

5) $8x^2 + 16x - 35 = 7$

$8x^2+16x=42$

$8(x^2+2x)=42$

$8(x^2+2x+1)=42+8$

$\frac{8(x+1)^2}{8}=\frac{50}{8}$

$\sqrt{(x+1)^2}=\sqrt{\frac{25}{4}}$

$x+1=\pm\frac{5}{2}$

$-1\ \ -1$

$-\frac{2}{2}\pm\frac{5}{2}$

$\boxed{x=\frac{3}{2},-\frac{7}{2}}$

6) $9n^2 - 18n - 53 = 3$

$9n^2-18n=56$

$9(n^2-2n)=56$

$9(n^2-2n+1)=56+9$

$\frac{9(n-1)^2}{9}=\frac{65}{9}$

$\sqrt{(n-1)^2}=\sqrt{\frac{65}{9}}$

$n-1=\pm\frac{\sqrt{65}}{3}$

$+1\ \ +1$

$n=1\pm\frac{\sqrt{65}}{3}$

Solve each equation with the quadratic formula.

7) $12m^2 = 12m + 22$

$12m^2-12m-22=0$

$x=\frac{12\pm\sqrt{(-12)^2-4(12)(-22)}}{2(12)}$

$=\frac{12\pm\sqrt{1200}}{24}$

$=\frac{12\pm20\sqrt{3}}{24}$

$\boxed{x=\frac{3\pm5\sqrt{3}}{6}}$

8) $n^2 = -11n + 102$

$n^2+11n-102=0$

$x=\frac{-11\pm\sqrt{(11)^2-4(1)(-102)}}{2(1)}$

$=\frac{-11\pm\sqrt{529}}{2}$

$=\frac{-11\pm23}{2}$

$\boxed{x=6,-17}$

9) $9x^2 + 3 = 7x$

$9x^2-7x+3=0$

$x=\frac{7\pm\sqrt{(-7)^2-4(9)(3)}}{2(9)}$

$=\frac{7\pm\sqrt{-59}}{18}$

$\boxed{x=\frac{7\pm i\sqrt{59}}{18}}$

① $-16x^2+72x+88=0$

$-8(2x^2-9x-11)=0$

$2x^2-11x+2x-11$

$x(2x-11)\ 1(2x-11)$

$-8(2x-11)(x+1)=0$

$\boxed{x=\frac{11}{2},-1}$

② $A=lw$

$54=(2w-3)(w)$

$54=2w^2-3w$ 108

$2w-3w-54=0$

$2w-12w+9w-54$

$2w(w-6)\ 9(w-6)$

$(2w+9)(w-6)=0$

$\boxed{w=\frac{-9}{2},6}$ $\boxed{w=6\ \ l=9}$

③ $30=(s+3)(s+2)$

$30=s^2+2s+3s+6$

$30=s^2+5s+6$

$s^2+5s-24=0$

$(s+8)(s-3)=0$

$\boxed{s=-8,3}$ $\boxed{s=3ft}$

④ $(s+5)(s+12)=120$

$s^2+12s+5s+60=120$

$s^2+17s-60=0$

$(s+20)(s-3)=0$

$\boxed{s=-20,3}$ $\boxed{8\times15}$

⑤ $(x+5)(x+6)=72$

$x^2+5x+6x+30=72$

$x^2+11x-42=0$

$(x+14)(x-3)=0$

$\boxed{x=-14,3}$ 3total feet 1.5 for 1side

⑥ $h=-16t^2+8t+80$

$-8(2t^2-t-10)=h$

$-8(2t^2-5t+4t-10)$

$t(2t-5)\ 2(t-5)$

$-8(2t-5)(t+2)=0$

$\boxed{t=\frac{5}{2},-2}$ $\boxed{t=2.5s}$

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⑦ $10=-16t^2+50t+4$

$-16t^2+50t-6=0$

$-2(8t^2-25t+3)=0$

$-2(8t^2-24t-1t+3)=0$

$8t(t-3)-1(t-3)$

$-2(8t-1)(t-3)=0$

$\boxed{t=\frac{1}{8},3}$ $\boxed{3sec}$

⑧ $13=-16t^2+36t+5$

$-16t^2+36t-8=0$

$-2(8t^2-18t+4)=0$

$-2(8t^2-16t-2t+4)=0$

$8t(t-2)-2(t-2)$

$-2(8t-2)(t-2)=0$

$\boxed{t=\frac{1}{4},2}$ $\boxed{2seconds}$