Algebra 1B ~ Quiz 3 Solutions (Use Quadratic Formula) Round to tenths!

Find d, the discriminant

Find $x=\left\{\frac{-b+\sqrt{d}}{2a}, \frac{-b-\sqrt{d}}{2a}\right\}$

① $x^2+7x-8=0$

$a=1$, $b=7$, $c=-8$

b^2-4ac = Formula for the discriminant

$(7)^2-4(1)(-8)$

$49+32=\boxed{81}=d=$ discriminant

$\sqrt{81}=9=\sqrt{d}$ (discriminant) use 9 for $\pm\sqrt{d}$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(7)+9}{2(1)}$ $\quad$ $x=\frac{-(7)-9}{2(1)}$

$x=\frac{2}{2}=1$ $\quad$ $x=\frac{-16}{2}=-8$

$x=\{1,-8\}$

② $x^2-5x+6=0$

$a=1$, $b=-5$, $c=6$

b^2-4ac

$(-5)^2-4(1)(6)$

$25-24=\boxed{1}=d=$ discriminant

$\sqrt{1}=1$ use 1 for $\pm\sqrt{d}$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(-5)+1}{2(1)}$ $\quad$ $x=\frac{-(-5)-1}{2(1)}$

$x=\frac{5+1}{2}=\frac{6}{2}=3$ $\quad$ $x=\frac{5-1}{2}=\frac{4}{2}=2$

$x=\{3,2\}$

③ $x^2-2x=35$ $\quad$ -35 to both sides to get ax^2+bx+c

$x^2-2x-35=0$

$a=1$, $b=-2$, $c=-35$

b^2-4ac

$(-2)^2-4(1)(-35)$

$4+140=\boxed{144}=d=$ discriminant

$\sqrt{144}=12$ use 12 for $\pm\sqrt{d}$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(-2)+12}{2(1)}$ $\quad$ $x=\frac{-(-2)-12}{2(1)}$

$x=\frac{2+12}{2}=\frac{14}{2}=7$ $\quad$ $x=\frac{2-12}{2}=\frac{-10}{2}=-5$

$x=\{7,-5\}$

④ $2x^2-x-15=0$

$a=2$, $b=-1$, $c=-15$

b^2-4ac

$(-1)^2-4(2)(-15)$

$1+120=\boxed{121}=d$ $\quad$ $\sqrt{d}=11$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(-1)+11}{2(2)}$ $\quad$ $x=\frac{-(-1)-11}{2(2)}$

$x=\frac{1+11}{4}=\frac{12}{4}=3$ $\quad$ $x=\frac{1-11}{4}=\frac{-10}{4}=-\frac{5}{2}$

$x=\left\{3,-\frac{5}{2}\right\}$

⑤ $3x^2+2=-8x$ $\quad$ Add $8x$ to both sides and put in $ax^2+bx+c=0$ order.

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

$a=3$, $b=8$, $c=2$

b^2-4ac

$(8)^2-4(3)(2)$

$64-24=\boxed{40}=d=$ discriminant

$\sqrt{40}=6.3245532\ldots\approx 6.32$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(8)+6.32}{2(3)}$ $\quad$ $x=\frac{-(8)-6.32}{2(3)}$

$x=\frac{-1.68}{6}\cong -.28$ $\quad$ $x=\frac{-14.32}{6}\cong -2.39$

$x=\{-.3,-2.4\}$

⑥ $4x^2-20x=0$ $\quad$ No "c" term so $c=0$

$a=4$, $b=-20$, $c=0$

b^2-4ac

$(-20)^2-4(4)(0)$

$400-0=\boxed{400}=d=$ discriminant

$\sqrt{400}=20$

$x=\frac{-b+\sqrt{d}}{2a}$ $\quad$ $x=\frac{-b-\sqrt{d}}{2a}$

$x=\frac{-(-20)+20}{2(4)}$ $\quad$ $x=\frac{-(-20)-20}{2(4)}$

$x=\frac{20+20}{8}=\frac{40}{8}=5$ $\quad$ $x=\frac{20-20}{8}=\frac{0}{8}=0$

$x=\{5,0\}$

⑦ discriminant ⑧ 2 real solutions + it can be factored

⑨ 2 solutions, cannot be factored ⑩ No real solutions