ANSWERS ~> Method 3 - QUADRATIC FORMULA

24. $x^2+6x+5=0$

$a=1$; $b=6$; $c=5$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{-6 \pm \sqrt{(6)^2-4(1)(5)}}{2(1)}$

$x = \frac{-6 \pm \sqrt{36-20}}{2}$

$x = \frac{-6 \pm \sqrt{16}}{2}$

$x = \frac{-6 \pm 4}{2}$

$x = \frac{-6+4}{2}$ and $x = \frac{-6-4}{2}$

$x = \frac{-2}{2}$ $\quad$ $x = \frac{-10}{2}$

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

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

$a=1$; $b=4$; $c=4$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

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

$x = \frac{-4 \pm \sqrt{16-16}}{2}$

$x = \frac{-4 \pm \sqrt{0}}{2}$

$x = \frac{-4 \pm 0}{2}$

$x = \frac{-4}{2}$

$x = -2$

26. $2x^2-5x-12=0$

$a=2$; $b=-5$; $c=-12$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{5 \pm \sqrt{(-5)^2-4(2)(-12)}}{2(2)}$

$x = \frac{5 \pm \sqrt{25+96}}{4}$

$x = \frac{5 \pm \sqrt{121}}{4}$

$x = \frac{5 \pm 11}{4}$

$x = \frac{5+11}{4}$ and $x = \frac{5-11}{4}$

$x = \frac{16}{4}$ $\quad$ $x = \frac{-6}{4}$

$x = 4$ $\quad$ $x = \frac{-3}{2}$

27. $4x^2-9=0$

$a=4$; $b=0$; $c=-9$

$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

$x = \frac{0 \pm \sqrt{(0)^2-4(4)(-9)}}{2(4)}$

$x = \frac{0 \pm \sqrt{0+144}}{8}$

$x = \frac{\pm \sqrt{144}}{8}$

$x = \pm \frac{12}{8}$

$x = \pm \frac{3}{2}$

28. $2x^2-5x=0$

$a=2$; $b=-5$; $c=0$.

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{5\pm\sqrt{(-5)^2-4(2)(0)}}{2(2)}$$

$$x=\frac{5\pm\sqrt{25-0}}{4}$$

$$x=\frac{5\pm\sqrt{25}}{4}$$

$$x=\frac{5\pm5}{4}$$

$x=\frac{5+5}{4}$ and $x=\frac{5-5}{4}$

$x=\frac{10}{4}$ $\quad$ $x=\frac{0}{4}$

$x=\frac{5}{2}$ $\quad$ $x=0$

29. $7x^2-2x-2=0$

$a=7$; $b=-2$; $c=-2$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

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

$$x=\frac{2\pm\sqrt{4+56}}{14}$$

$$x=\frac{2\pm\sqrt{60}}{14}$$

$$x=\frac{2\pm\sqrt{4\times15}}{14}$$

$$x=\frac{2\pm2\sqrt{15}}{14}$$

$$x=\frac{1\pm1\sqrt{15}}{7}$$

30. $4x=5-4x^2$

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

$a=4$; $b=4$; $c=-5$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

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

$$x=\frac{-4\pm\sqrt{16+80}}{8}$$

$$x=\frac{-4\pm\sqrt{96}}{8}$$

$$x=\frac{-4\pm\sqrt{16\times6}}{8}$$

$$x=\frac{-4\pm4\sqrt{6}}{8}$$

$$x=\frac{-1\pm1\sqrt{6}}{2}$$

31 $x^2+5x+8=0$

$a=1$; $b=5$; $c=8$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$$x=\frac{-5\pm\sqrt{(5)^2-4(1)(8)}}{2(1)}$$

$$x=\frac{-5\pm\sqrt{25-32}}{2}$$

$$x=\frac{-5\pm\sqrt{-7}}{2}$$ since $j^2=-1$

$$x=\frac{-5\pm\sqrt{7j^2}}{2}$$

$$x=\frac{-5\pm j\sqrt{7}}{2}$$

32. $x^2 - x + 7 = 0$

$a = 1;\ b = -1;\ c = 7$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{1 \pm \sqrt{(-1)^2 - 4(1)(7)}}{2(1)}$$

$$x = \frac{1 \pm \sqrt{1 - 28}}{2}$$

$$x = \frac{1 \pm \sqrt{-27}}{2} \quad \text{since } i^2 = -1$$

$$x = \frac{1 \pm \sqrt{27 i^2}}{2}$$

$$x = \frac{1 \pm i\sqrt{9 \times 3}}{2}$$

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

33. $2x^2 + 3x + 3 = 0$

$a = 2;\ b = 3;\ c = 3$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

$$= \frac{-3 \pm \sqrt{9 - 24}}{4}$$

$$= \frac{-3 \pm \sqrt{-15}}{4} \quad \text{Since } i^2 = -1$$

$$= \frac{-3 \pm \sqrt{15 i^2}}{4}$$

$$= \frac{-3 \pm i\sqrt{15}}{4}$$

34. $5x^2 + 5x + 2 = 0$

$a = 5;\ b = 5;\ c = 2$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

$$x = \frac{-5 \pm \sqrt{25 - 40}}{10}$$

$$= \frac{-5 \pm \sqrt{-15}}{10}$$

$$= \frac{-5 \pm \sqrt{15 i^2}}{10}$$

$$= \frac{-5 \pm i\sqrt{15}}{10}$$