$ax^2+bx+c=0$ $\quad x=\dfrac{-b\pm\sqrt{b^2-4ac}}{2a}$

Math 20-2

Name_____

Date_____

Quadratic Formula - Examples

1) $3n^2-11n+6=0$

$a=3$, $b=-11$, $c=6$

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

$x=\dfrac{11\pm\sqrt{121-4(3)(6)}}{2(3)}$

$x=\dfrac{11\pm\sqrt{49}}{6}$

$x=\dfrac{11+7}{6}$ $\quad x=\dfrac{11-7}{6}$

$x=\dfrac{18}{6}$ $\quad x=\dfrac{4}{6}$

$x=3$ $\quad x=\dfrac{2}{3}$

2) $4x^2-7x-30=0$

$a=4$, $b=-7$, $c=-30$

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

$x=\dfrac{7\pm\sqrt{49-4(4)(-30)}}{2(4)}$

$x=\dfrac{7\pm\sqrt{529}}{8}$

$x=\dfrac{7+23}{8}$ $\quad x=\dfrac{7-23}{8}$

$x=\dfrac{30}{8}$ $\quad x=-\dfrac{16}{8}$

$x=\dfrac{15}{4}$ $\quad x=-2$

3) $5k^2+2k-19=0$

$a=5$, $b=2$, $c=-19$

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

$x=\dfrac{-2\pm\sqrt{4-4(5)(-19)}}{2(5)}$

$x=\dfrac{-2\pm\sqrt{384}}{10}$

$x=\dfrac{-2+19.6}{10}$ $\quad x=\dfrac{-2-19.6}{10}$

$x=\dfrac{17.6}{10}$ $\quad x=\dfrac{-21.6}{10}$

$x=1.8$ $\quad x=-2.2$

4) $v^2-6v-17=0$

$a=1$, $b=-6$, $c=-17$

$x=\dfrac{6\pm\sqrt{36-4(1)(-17)}}{2(1)}$

$x=\dfrac{6\pm\sqrt{104}}{2}$

$x=\dfrac{6+10.2}{2}$ $\quad x=\dfrac{6-10.2}{2}$

$x=\dfrac{16.2}{2}$ $\quad x=\dfrac{-4.2}{2}$

$x=8.1$ $\quad x=-2.1$

5) $x^2 + 13 = 8x$ 6) $3b^2 - 11 = -2b$

quadratic = zero

positive

$-8x$

$x^2 - 8x + 13 = 0$

$a = 1$
$b = -8$
$c = 13$

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

$$x = \frac{8 \pm \sqrt{64 - 4(1)(13)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{12}}{2}$$

$\sqrt{4 \times 3}$

$2\sqrt{3}$

$$x = \frac{8 \pm 2\sqrt{3}}{2}$$

8, 2, 2 ÷ 2

$$x = \frac{4 \pm 1\sqrt{3}}{1}$$

$$x = 4 \pm \sqrt{3}$$

two answers

$x = 4 + \sqrt{3}$ $x = 4 - \sqrt{3}$

4.1 Quad Formula - examples 2

6) $3b^2 - 11 = -2b$ $+2b$

positive quadratic = 0

$3b^2 + 2b - 11 = 0$

$a = 3$
$b = 2$
$c = -11$

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

$$x = \frac{-2 \pm \sqrt{4 - 4(3)(-11)}}{2(3)}$$

$$x = \frac{-2 \pm \sqrt{136}}{6}$$

$$x = \frac{-2 + 11.66}{6} \qquad x = \frac{-2 - 11.66}{6}$$

$$x = \frac{9.66}{6} \qquad x = \frac{-13.66}{6}$$

$x = 1.6$ $\qquad$ $x = -2.3$