**The Quadratic Formula**

A general quadratic equation: $ax^{2}+bx+c=0$

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

Fill in the blanks below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Equation** | **Quadratic formula** | **Simplified** | **Solutions (**$2$**dp)** |
| $$x^{2}+4x+2=0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left( \right)}}{2\left( \right)}$$ | $$x=\frac{-4\pm \sqrt{8}}{2}$$ | $x=$ and $x=$ |
| $$x^{2}-5x+3=0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left( \right)}}{2\left( \right)}$$ | $$x=\frac{5\pm \sqrt{ }}{2}$$ | $x=$ and $x=$ |
| $$x^{2}+x =0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left(-3\right)}}{2\left( \right)}$$ | $$x=\frac{ \pm \sqrt{ }}{ }$$ | $x=$ and $x=$ |
| $$2x^{2} x =0$$ | $$\frac{-\left(7\right)\pm \sqrt{\left(7\right)^{2}-4\left( \right)\left(1\right)}}{2\left( \right)}$$ | $$x=\frac{ \pm \sqrt{ }}{ }$$ | $$x=$$and $x=$ |
| $$ x^{2} x =0$$ | $$\frac{-\left(-5\right)\pm \sqrt{\left(-5\right)^{2}-4\left(3\right)\left(-4\right)}}{2\left(3\right)}$$ | $$x=\frac{ \pm \sqrt{ }}{ }$$ | $x=$ and $x=$ |
| $$ x^{2} x =0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left( \right)}}{2\left( \right)}$$ | $$x=\frac{-3\pm \sqrt{5}}{2}$$ | $x=$ and $x=$ |
| $$ x^{2} x =0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left( \right)}}{2\left( \right)}$$ | $$x=\frac{2\pm \sqrt{24}}{2}$$ | $$x=$$and $x=$ |
| $$ x^{2} x =0$$ | $$\frac{-\left( \right)\pm \sqrt{\left( \right)^{2}-4\left( \right)\left( \right)}}{2\left( \right)}$$ | $$x=\frac{6\pm \sqrt{28}}{4}$$ | $x=$ and $x=$ |

Can you link each quadratic formula below to each function?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Function** |  | **Equation** |  | **Quadratic formula** |
|  |  | $$y=x^{2}-4x+3$$ |  | $$x=\frac{-3\pm \sqrt{1}}{2}$$ |
|  |  | $$y=x^{2}+3x+2$$ |  | $$x=\frac{4\pm \sqrt{0}}{2}$$ |
|  |  | $$y=x^{2}-x-2$$ |  | No solutions |
|  |  | $$y=x^{2}-4x+4$$ |  | $$x=\frac{4\pm \sqrt{4}}{2}$$ |
|  |  | $$y=x^{2}+2x+2$$ |  | $$x=\frac{1\pm \sqrt{9}}{2}$$ |