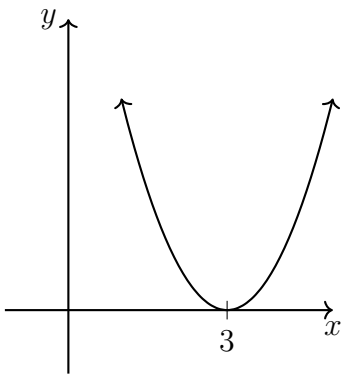
BECA/Huson/Algebra 2: Complex Numbers & Rational Exponents Name:
12 March 2024

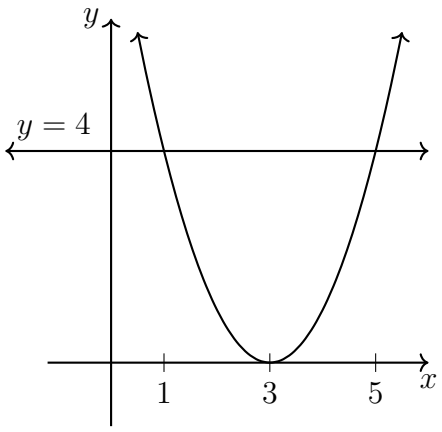
### 3.20 PreTest: Solving quadratics, complex numbers, radicals and exponents

*Do Not Use a Calculator* A2.REI.4 Solve quadratic equations

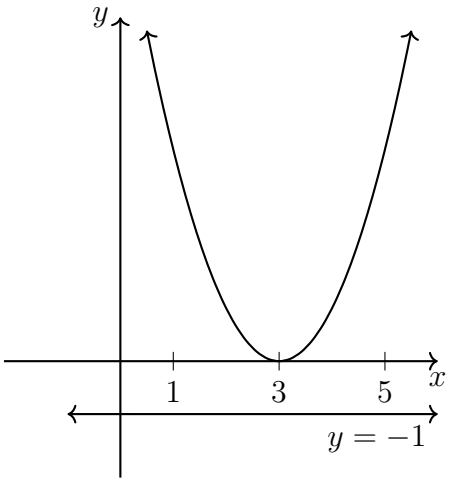
1. Given the function $f(x) = (x-3)^2$. How many solutions are there to $f(x) = 0$? Mark and label it on the graph.




2. How many solutions are there to $(x-3)^2 = 4$? Mark and label them on the graph.




3. How many, if any, solutions are there to $(x-3)^2 = -1$? Mark and label it on the graph.



4. Given the quadratic equation, complete the square to determine the number of solutions:

$$x^2 + 6x + 7 = 0$$

(a) Find $\frac{b}{2} =$

(b) Find $\left(\frac{b}{2}\right)^2 =$

(c) Rewrite the equation, adding or subtracting to both sides to complete the square.

(d) How many real solutions does the equation have?

5. $$x^2 + 12x + 42 = 0$$

(a) Find $\frac{b}{2} =$

(b) Find $\left(\frac{b}{2}\right)^2 =$

(c) Rewrite the equation, adding or subtracting to both sides to complete the square.

(d) How many real solutions does the equation have?

6. $$x^2 + 14x + 49 = 0$$

(a) Find $\frac{b}{2} =$

(b) Find $\left(\frac{b}{2}\right)^2 =$

(c) Rewrite the equation, adding or subtracting to both sides to complete the square.

(d) How many real solutions does the equation have?

7. Square both sides of the equation and solve for $x$.

   (a) $\sqrt{x+9} = 4$ (b) Check your solution.

8. Cube both sides of the equation and solve for $x$.

   (a) $\sqrt[3]{x-3} = 3$ (b) Check your solution.

9. Solve for $x$ and check.

   (a) $\sqrt{2x+1} - 7 = -2$ (b) Check your solution.