

READY, SET, GO!

Name *Key*

Period

Date

READY

Topic: Simplifying Radicals

Simplify each of the radicals below.

1. $\sqrt{8}$ $\sqrt{4 \cdot 2}$
 $2\sqrt{2}$

2. $\sqrt{18}$ $\sqrt{9 \cdot 2}$
 $3\sqrt{2}$

3. $\sqrt{32}$
 $4\sqrt{2}$

4. $\sqrt{20} = \sqrt{4 \cdot 5}$
 $2\sqrt{5}$

5. $\sqrt{45}$ $\sqrt{9 \cdot 5}$
 $3\sqrt{5}$

6. $\sqrt{80}$
 $4\sqrt{5}$

7. What is the connection between the radicals above? Explain.

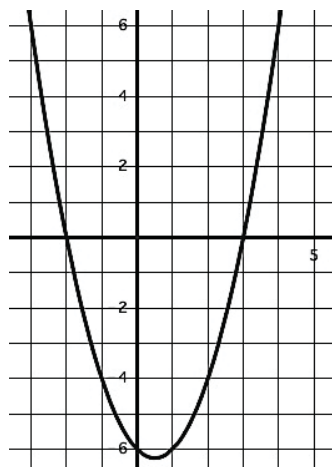
SET

Topic: Determine the nature of the x-intercepts for each quadratic below.

Given the quadratic function, its graph or other information, below determine the nature of the x-intercepts (what type of number it is). Explain or show how you know.

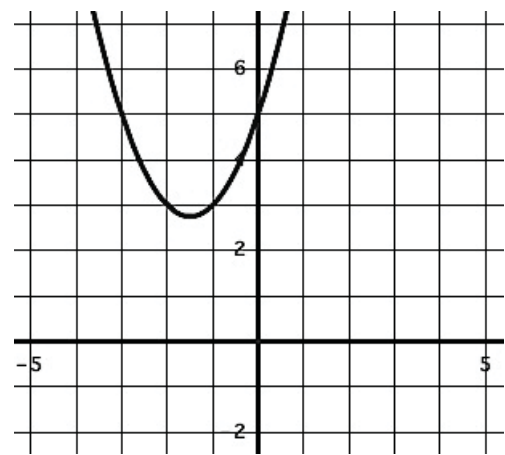
(Rational: "Q", Irrational: " \bar{Q} ", or "no x-intercepts")

8. Determine the nature of the x-intercepts.



2 real, rational roots

9. Determine the nature of the x-intercepts



2 imaginary roots

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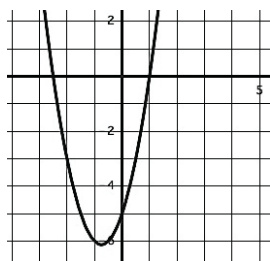
10. Determine the nature of the x-intercepts.

$$f(x) = x^2 + 4x - 24$$

11. Determine the nature of the x-intercepts.

$$g(x) = (2x - 1)(5x + 2) \quad \text{2 real rational roots}$$

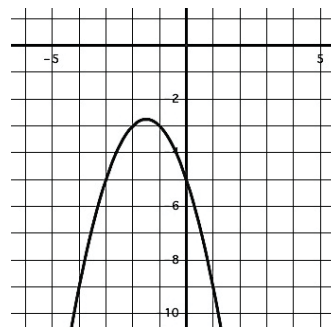
12. Determine the nature of the x-intercepts.



2 real, rational roots

$$f(x) = 2x^2 + 3x - 5 = (2x + 5)(x - 1)$$

13. Determine the nature of the x-intercepts.



No x-intercepts
2 imaginary roots

14. Determine the nature of the x-intercepts.

$$r(t) = t^2 - 8t + 16 = (t - 4)^2$$

1 real, rational root
(double root)

15. Determine the nature of the x-intercepts.

$$h(x) = 3x^2 - 5x + 9$$

$$25 - 4(3)(9)$$

2 imaginary roots

GO

Topic: Finding x-intercepts for quadratics using factoring and quadratic formula.

If the given quadratic function can be factored then factor and provide the x-intercepts. If you cannot factor the function then use the quadratic formula to find the x-intercepts.

16. $A(x) = x^2 + 4x - 21$

$$0 = (x + 7)(x - 3)$$

$$\begin{matrix} x + 7 = 0 & x - 3 = 0 \\ \boxed{x = -7} & \boxed{x = 3} \\ \boxed{(-7, 0)} & \boxed{(3, 0)} \end{matrix}$$

17. $B(x) = 5x^2 + 16x + 3$

$$0 = (5x + 1)(x + 3)$$

$$\begin{matrix} 5x + 1 = 0 & x + 3 = 0 \\ \boxed{x = -\frac{1}{5}} & \boxed{x = -3} \\ \boxed{(-\frac{1}{5}, 0)} & \boxed{(-3, 0)} \end{matrix}$$

18. $C(x) = x^2 - 4x + 1$

$$x^2 - 4x + 1 = 0$$

$$x^2 - 4x + 4 = -1 + 4$$

$$(x - 2)^2 = 3 \quad x - 2 = \pm\sqrt{3}$$

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

$$\boxed{(2 + \sqrt{3}, 0)} \quad \boxed{(2 - \sqrt{3}, 0)}$$

19. $D(x) = x^2 - 16x + 4$

Does not factor

$$x = \frac{16 \pm \sqrt{256 - 4(1)(4)}}{2(1)}$$

$$x = \frac{16 \pm \sqrt{240}}{2}$$

$$x = \frac{16 \pm 4\sqrt{15}}{2} = \boxed{\frac{8 \pm 2\sqrt{15}}{1}}$$

20. $E(x) = x^2 + 3x - 40$

$$= (x + 8)(x - 5)$$

$$\begin{matrix} x + 8 = 0 & x - 5 = 0 \\ \boxed{x = -8} & \boxed{x = 5} \\ \boxed{(-8, 0)} & \boxed{(5, 0)} \end{matrix}$$

21. $F(x) = 2x^2 - 3x - 9$

$$0 = (2x + 3)(x - 3)$$

$$\begin{matrix} 2x + 3 = 0 & x - 3 = 0 \\ \boxed{x = -\frac{3}{2}} & \boxed{x = 3} \end{matrix}$$

22. $G(x) = x^2 - 3x$

$$0 = x(x - 3)$$

$$\boxed{x = 0} \quad \boxed{x = 3}$$

23. $H(x) = x^2 + 6x + 8$

$$0 = (x + 4)(x + 2)$$

$$\begin{matrix} x + 4 = 0 & x + 2 = 0 \\ \boxed{x = -4} & \boxed{x = -2} \end{matrix}$$

24. $K(x) = 3x^2 - 11$

$$0 = 3x^2 - 11$$

$$\frac{11}{3} = \frac{3x^2}{3}$$

$$\sqrt{x^2} = \sqrt{\frac{11}{3}}$$

$$x = \pm \frac{\sqrt{11}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \boxed{\pm \frac{\sqrt{33}}{3}}$$

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