

Accelerated Geom/Alg
Quadratics Review

Name _____'s favorite childhood toy was:

Solve the following equations by factoring, completing the square or taking square roots.

1. $-2(x-10)^2 + 4 = -16$

1. $x = 10 \pm \sqrt{10}$

2. $4(x-3)^2 - 15 = -3$

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

3. $x^2 - 12x + 3 = 0$

3. $x = 6 \pm \sqrt{33}$

4. $2x^2 - 8x - 24 = 0$

4. $x = -2, 6$

5. $4(x-6)^2 - 10 = 70$

5. $x = 6 \pm 2\sqrt{5}$

6. $x^2 - 14x + 13 = 0$

6. $x = 1, 13$

7. $3x^2 - 30x = -36$

7. $x = 5 \pm \sqrt{13}$

8. The quadratic equation $3kx^2 - 6kx + 2 = 0, k \neq 0$, has one real root. Solve for k .

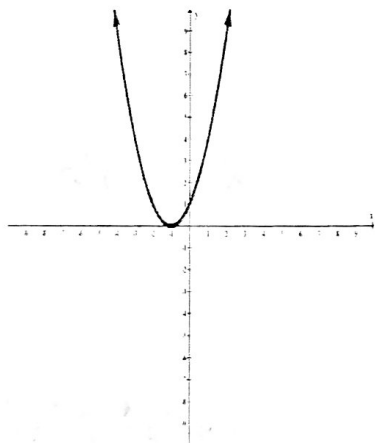
$$k = \frac{2}{3}$$

9. The quadratic equation $f(x) = 2x^2 + 3kx - 1 = 0$ has two real roots with a discriminant of 44. Solve for k .

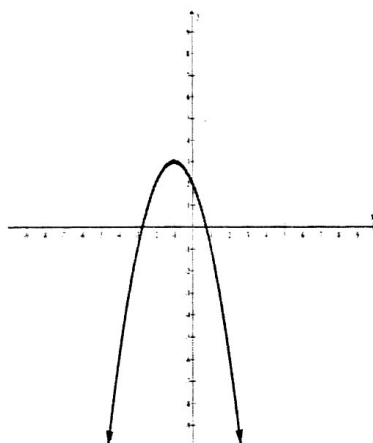
$$k = \pm 2$$

10. Decide if the discriminant is positive, negative or 0.

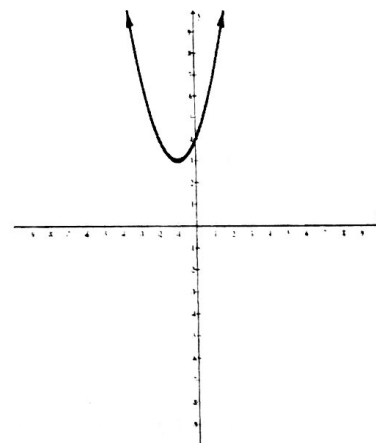
a. Discriminant: 0



b. Discriminant: positive



c. Discriminant: negative



11. The quadratic equation $g(x) = \left(\frac{1}{2}k + 6\right)x^2 + 2kx + 1$ has one real solution. Solve for k .

$$k = \frac{1 \pm \sqrt{97}}{4}$$

Solve the following quadratic equations using the Quadratic Formula.

12. $3x^2 + 10x = -5$

$$12. \underline{x = \frac{-5 \pm \sqrt{10}}{3}}$$

13. $4x^2 - 5x - 6 = 0$

13. $x = \frac{-3}{4}, 2$

14. $x^2 + 8x = 9$

14. $x = 1, -9$

15. $3x^2 + 4x - 6 = 0$

15. $x = \frac{-2 \pm \sqrt{22}}{3}$

Use the discriminant to determine the number and type of solutions for each quadratic equation.

16. $4x^2 + 3x - 7 = 0$

17. $-2x^2 + 5x + 4 = 0$

18. $3x^2 + 6x + 3 = 0$

Discriminant: 121

Discriminant: 57

Discriminant: 0

of Solutions: 2 real

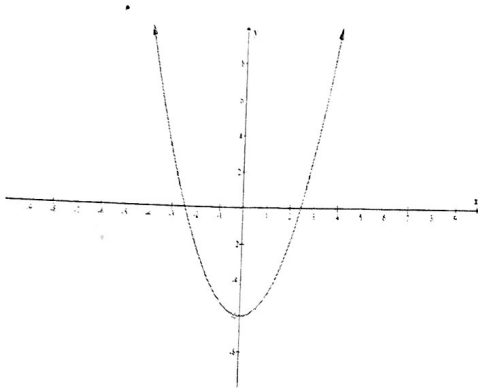
of Solutions: 2 real

of Solutions: 1 real

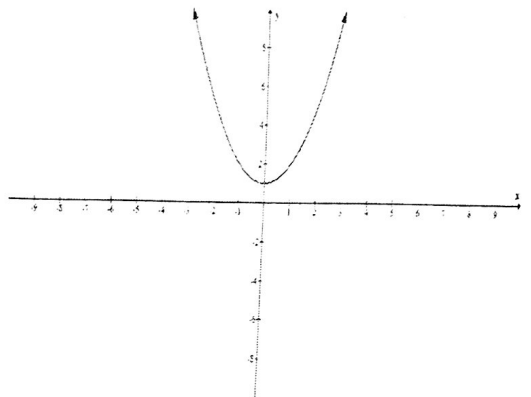
19. Which of the following would have a discriminant = 0? C

20. Which of the following would have a discriminant = a negative number? B

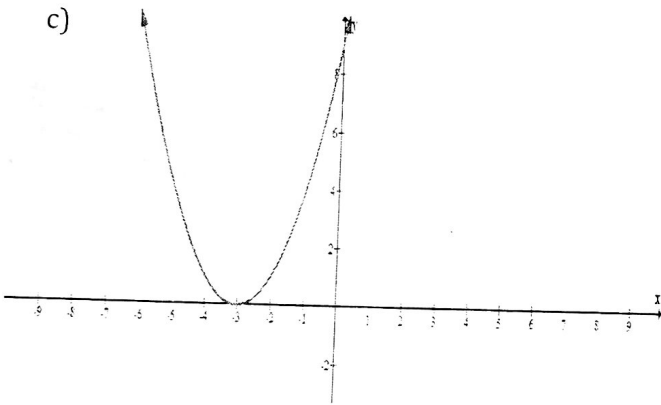
a)



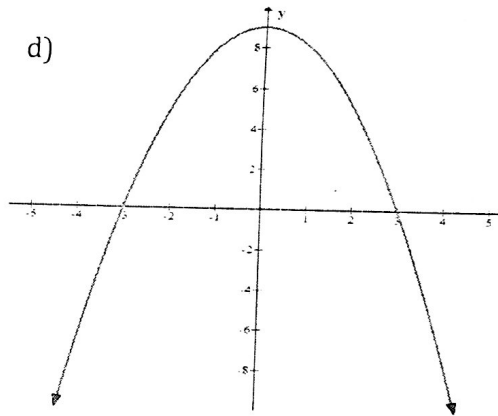
b)



c)

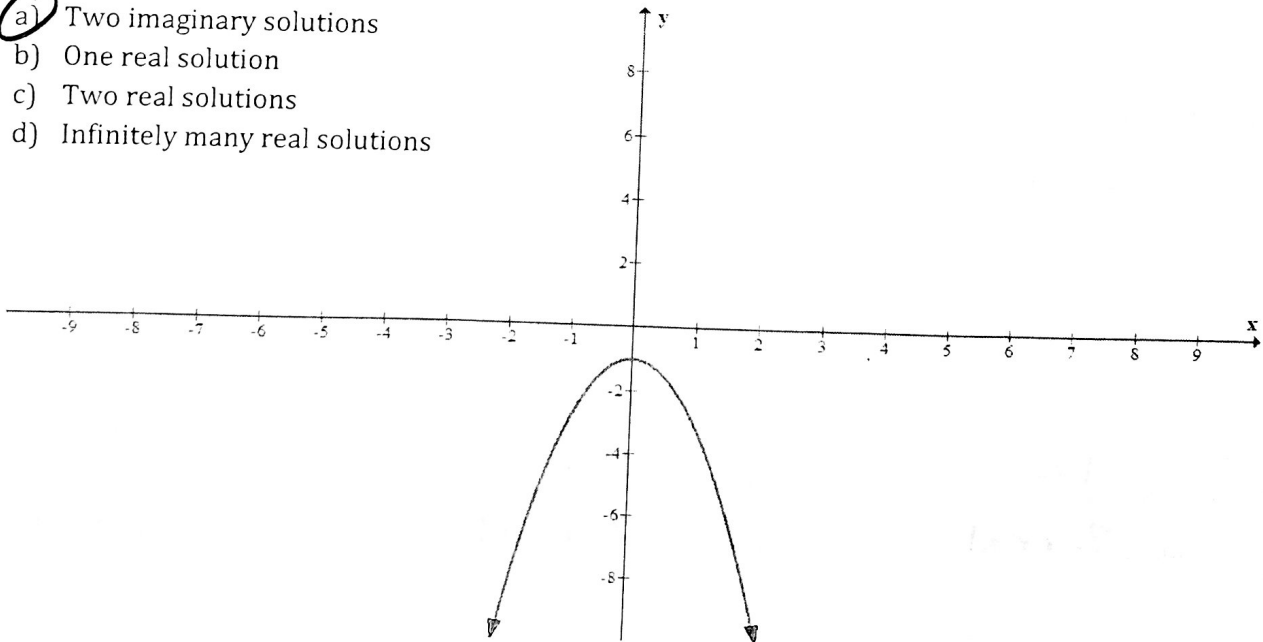


d)



21. How many solutions does the quadratic equation have?

- a) Two imaginary solutions
- b) One real solution
- c) Two real solutions
- d) Infinitely many real solutions



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simplify the following:

21. $\sqrt{-250}$ $\pm 5i\sqrt{10}$

22. $\sqrt{-81}$ $\pm 9i$

23. i^{65} i

24. $\sqrt{-147}$ $\pm 7i\sqrt{3}$

25. i^{180} 1

26. i^6 -1

27. $(7 + 6i) - (3i - 18)$ $25 + 3i$

28. $(i + 8) + (-4i - 6)$ $14 - 3i$

29. $(5 + 6i)(-8i - 6)$
 $18 - 76i$

30. $(2 + 5i)(7 - 9i)$ $59 + 17i$

31. Write the complex conjugate of the following:

$10 + 8i$ $\underline{10 - 8i}$

$7 - 5i$ $\underline{7 + 5i}$

$-8i + 4$ $\underline{4 + 8i}$

$9 - 9i$ $\underline{9 + 9i}$

32. Use a complex conjugate to simplify the following and write it in the form $a \pm bi$:

$\frac{6+8i}{9+i}$

$\frac{31+33i}{41}$

$\frac{24-27i}{29}$

$\frac{3-9i}{7-3i}$

Solve the following quadratic equations by any method:

33. $2x^2 + 6x + 7 = 0$

$$x = \frac{-3 \pm \sqrt{5}}{2}$$

34. $x^2 - 8x + 3 = -22$

$$x = 4 \pm 3i$$

35. $4x^2 + 225 = 25$

$$x = \pm 5\sqrt{2}$$

36. $-3(x-1)^2 = 9$

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