

## SOLVING POLYNOMIALS

Decide the type of equation (linear, quadratic, higher).

A. If it is linear, solve it by isolating the variable.

B. If there is only one occurrence of the variable, you can also solve the equation by isolating.

C. If there is more than one occurrence of the variable, try factoring:

1<sup>st</sup>: Zero the equation and write the polynomial in descending (or ascending) order.

2<sup>nd</sup>: Factor out monomials and lead minuses (if possible)

3<sup>rd</sup>: Factor out binomials if possible

4<sup>th</sup>: Branch (if appropriate)

5<sup>th</sup>: Solve each branch

6<sup>th</sup>: Consolidate your solutions

1.  $a^2 - 3a = 0$

2.  $3b - 2 = b^2$

3.  $3c - 1 = 0$

4.  $6d^2 - 2d = 4$

5.  $5e^2 = e$

6.  $2f^2 + 4f + 2 = 0$

7.  $4g - 8 = 0$

8.  $2h + 13 = 0$

9.  $5j + 6 = -j^2$

10.  $3k - 4 + k^2 = 0$

11.  $5l^2 + 1 = 6l$

12.  $m^3 - 6m^2 - 7m = 0$

13.  $n(n + 2) = n + 6$

14.  $p^2 = 9$

15.  $q - 16 = 0$

16.  $r^2 = 25$

17.  $s^3 - 4s = 0$

18.  $5 + t^2 = 6t$

19.  $20 - u^2 = 8u$

20.  $20 - 3v^2 = 4v$

21.  $5(w + 4) = w$

22.  $2x(x + 1) = 4x$

23.  $2y(3y + 8) = 6$

24.  $5z + 50 = -10$

25.  $6a^2 = 5a - 1$

26.  $2b^2 - 200 = 0$

27.  $2c^3 - 200c = 0$

28.  $6d^2 = 1 - d$

29.  $18e^2 + 44e = 2e^3$

30.  $2f^2 - 6 = 11f$

31.  $3g + 1 = 2g + 7$

32.  $4h - 1 = 4h + 5$

33.  $-j^2 + 18j = 0$

34.  $15k^2 - 30k = 0$

35.  $5m^2 + m = 3 - 5m^2$

36.  $3n^2 - 7n = 3n^2 + 21$

37.  $8p - p^2 + 10 = 1$

38.  $4q^2 - 6q = 0$

39.  $30r - 80r^2 = 0$

40.  $-s^2 - 9s = 14$

41.  $36 - t^2 = 0$

42.  $7u - 3 = u + 12$

43.  $v^2 + 4v + 4 = 0$

44.  $15 - 2w = w^2$

45.  $2x^2 + 13x + 15 = 0$

46.  $2y^2 + 13y = 15$

47.  $100z^2 - 49 = 0$

48.  $25 - 9a^2 = 0$

49.  $10(b + 3) = 12b + 20$

50.  $84c^3 - 2c^2 = 60c$

## ANSWERS

1.  $a = 0, 3$
2.  $b = 1, 2$
3.  $c = \frac{1}{3}$
4.  $d = -\frac{2}{3}, 1$
5.  $e = 0, \frac{1}{5}$
6.  $f = -1$
7.  $g = 2$
8.  $h = -6\frac{1}{2}$
9.  $j = -3, -2$
10.  $k = -4, 1$
11.  $l = \frac{1}{5}, 1$
12.  $m = 0, -1, 7$
13.  $n = 2, -3$
14.  $p = -3, 3$
15.  $q = 16$
16.  $r = -5, 5$
17.  $s = 0, -2, 2$
18.  $t = 5, 1$
19.  $u = -10, 2$
20.  $v = -3\frac{1}{3}, 2$
21.  $w = -5$
22.  $x = 0, 1$
23.  $y = -3, \frac{1}{3}$
24.  $z = -12$
25.  $a = \frac{1}{3}, \frac{1}{2}$
26.  $b = -10, 10$
27.  $c = 0, -10, 10$
28.  $d = -\frac{1}{2}, \frac{1}{3}$
29.  $e = 0, -2, 11$
30.  $f = -\frac{1}{2}, 6$
31.  $g = 6$
32. *no solution*
33.  $j = 0, 18$
34.  $k = 0, 2$
35.  $m = -\frac{3}{5}, \frac{1}{2}$
36.  $n = -3$
37.  $p = -1, 9$
38.  $q = 0, 1\frac{1}{2}$
39.  $r = 0, \frac{3}{8}$
40.  $s = -7, -2$
41.  $t = 6, -6$
42.  $u = 2\frac{1}{2}$
43.  $v = -2$
44.  $w = -5, 3$
45.  $x = -5, -1\frac{1}{2}$
46.  $y = -7\frac{1}{2}, 1$
47.  $z = -\frac{7}{10}, \frac{7}{10}$
48.  $a = -1\frac{2}{3}, 1\frac{2}{3}$
49.  $b = 5$
50.  $c = -\frac{5}{6}, 0, \frac{6}{7}$

# ALGEBRA ONE

## Test

**Solve the following equations:**

1.  $a^2 + 7a + 10 = 0$

2.  $3b^2 = 5b$

3.  $c^2 - 2c = 8$

4.  $d^2 + 6 = 7d$

5.  $2e + 3 = 10$

6.  $20f^2 + 2f = 0$

7.  $14g^2 + 12 = 4g$

8.  $h^2 - 4 = 0$

9.  $j(j-3) = -2$

10.  $k^2 + 3k = 5k + 3$

11.  $2l - 12 = 0$

12.  $m^3 + 5m^2 + 4m = 0$