

Unit 2B Re-Test Review Sheet + Key

* You must show ALL WORK for EVERY PROBLEM in order to be eligible for the re-test. If you do not show all work then your re-test will not be scored.

Factor each and find all roots.

1) $x^2 - 6x + 8 = 0$

2, 4

3) $x^2 + 2x - 15 = 0$

3, -5

5) $2x^2 - 3x - 5 = 0$

$\frac{5}{2}, -1$

7) $5x^3 - 18x^2 + 9x = 0$

0, $\frac{3}{5}, 3$

2) $x^2 - 8x + 15 = 0$

3, 5

4) $5x^2 - 23x + 12 = 0$

$\frac{3}{5}, 4$

6) $2x^2 - 9x - 5 = 0$

$-\frac{1}{2}, 5$

8) $2x^3 + 5x^2 - 3x = 0$

0, $\frac{1}{2}, -3$

Solve each equation by taking square roots.

9) $n^2 - 8 = -2$

$\pm\sqrt{6}$

11) $5x^2 - 6 = 159$

$\pm\sqrt{33}$

13) $7 - 4n^2 = -505$

$\pm 8\sqrt{2}$

10) $a^2 - 5 = 27$

$\pm 4\sqrt{2}$

12) $8x^2 - 10 = 150$

$\pm 2\sqrt{5}$

Solve each equation by completing the square.

14) $8x^2 - 64 = -16x$

2, -4

16) $4m^2 - 21 = -8m$

$\frac{3}{2}, -\frac{7}{2}$

18) $x^2 + 36 = -6x$

$-3 \pm 3i\sqrt{3}$

20) $11v^2 - 10v - 48 = 10v^2 + 3v$

16, -3

15) $m^2 + 15 = 8m$

5, 3

17) $a^2 - 6a = -78$

$3 \pm i\sqrt{69}$

19) $v^2 = -2 - 16v$

$-8 \pm \sqrt{62}$

Find the discriminant of each quadratic equation then state the number and type of solutions.

21) $r^2 + 8r + 12 = 8$

80, two real irrational

23) $-9x^2 = 11x + 14$

-383, two imaginary

25) $-9k^2 + 8 = 11k + 3$

301, two real irrational

22) $6n^2 + 8n + 9 = 10$

88, two real irrational

24) $12k^2 + 14k = 9 + 4k^2$

484, two real rational

Solve each equation with the quadratic formula.

26) $x^2 + 2x + 1 = 0$

-1

28) $4a^2 - a + 1 = 0$

$\frac{1 \pm i\sqrt{15}}{8}$

30) $-6v^2 - 9v = -12$

$-\frac{3 \pm \sqrt{41}}{4}$

27) $5a^2 - 2a + 4 = 0$

$\frac{1 \pm i\sqrt{79}}{5}$

29) $5r^2 = 4r + 12$

2, $-\frac{6}{5}$

31) $-2p^2 = -12 + 10p$

-6, 1

32) $10 + 4x = 4x - 3x^2 + \frac{i\sqrt{30}}{3}$

Find all roots.

33) $2x^4 - 5x^2 - 12 = 0$ $\pm 2, \pm \frac{i\sqrt{6}}{2}$

34) $5x^3 + 20x^2 + 4x + 16 = 0$ $-4, \frac{2i\sqrt{5}}{5}$

35) $x^3 - 125 = 0$ $5, \frac{-5 \pm 5i\sqrt{3}}{2}$

36) $5x^4 - 14x^2 - 24 = 0$ $2, -2, \pm \frac{i\sqrt{30}}{5}$

37) $x^3 - 7x^2 - 3x = 0$ $0, \frac{7 \pm \sqrt{61}}{2}$

38) $5x^3 - 21x^2 - 20x = 0$ $0, -\frac{4}{5}, 5$

Write a polynomial function of least degree that has real coefficients, the following zeros, and a leading coefficient of 1.

39) 2, 5, 3
 $f(x) = x^3 - 10x^2 + 31x - 30$

40) -3, -2, 0
 $f(x) = x^3 + 5x^2 + 6x$

A polynomial function with rational coefficients has the following zeros. Find all additional zeros.

41) $-2 + 3i, -2 - 2i$
 $-2 - 3i, -2 + 2i$

42) $-1, 3 + 2i$
 $3 - 2i$

43) 2, 4, -4, $-3 + \sqrt{5}$
 $-3 - \sqrt{5}$

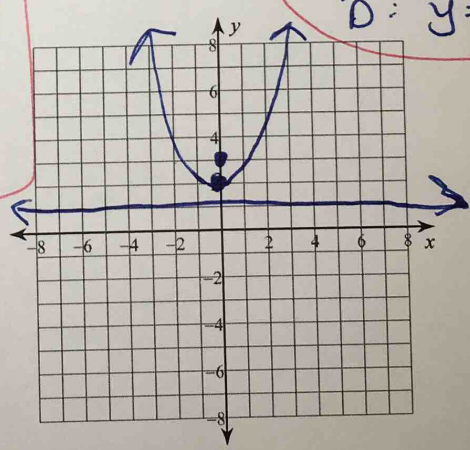
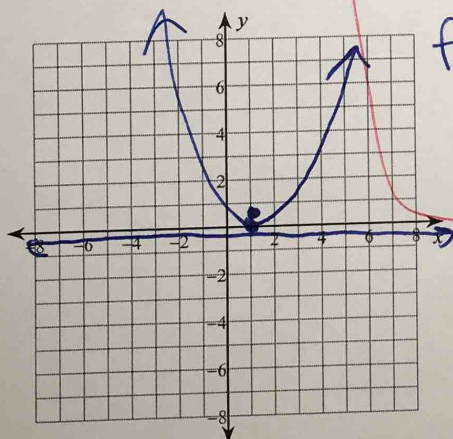
44) 5, $-1 + 3i$
 $-1 - 3i$

45) 3, $1 - 2i, -2 - 2i$
 $1 + 2i, -2 + 2i$

Identify the focus and directrix of each. Then sketch the graph.

46) $y = (x - 1)^2$
 vertex: (1, 0)
 focus: $(1, \frac{1}{4})$
 Dir: $y = -\frac{1}{4}$

47) $y = \frac{1}{4}x^2 + 2$
 vertex: (0, 2)
 F: (0, 3)
 D: $y = 1$



Use the information provided to write the vertex form equation of each parabola.

48) Focus: (-10, 5), Directrix: $y = -1$
 $y = \frac{1}{12}(x + 10)^2 - 2$

49) Focus: (1, -2), Directrix: $y = -4$
 $y = \frac{1}{4}(x - 1)^2 - 3$

50) Focus: (1, -6), Directrix: $y = -4$
 $y = -\frac{1}{4}(x - 1)^2 - 5$