

Name: \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_

Algebra 2: Unit 3 Test Review

Simplify.

1) $-\sqrt{81}$	2) $8\sqrt{50}$	3) $5\sqrt{-32}$
4) $\sqrt{\frac{25}{4}} - \sqrt{16}$	5) $\sqrt{\frac{15}{60}}$	6) $\sqrt{\frac{18}{12}}$
7) $\sqrt{-144} - 7\sqrt{-36}$	8) $\frac{4}{3+\sqrt{5}}$	9) $\frac{7}{\sqrt{12}}$

Simplify. Write the answer in standard form ( $a + bi$ ).

10) $(9 - 7i) - (4 + 5i)$	11) $2i(5 - 8i)$
12) $(1 - 2i)(3 + 9i)$	13) $(2 - 3i)^2$
14) $\frac{5}{8i}$	15) $\frac{7}{5 - 2i}$

Solve by factoring.

16) $2x^2 + 9x + 7 = 0$	17) $2x^2 + 14x = 0$	18) $3x^2 + 14x - 49 = 0$
19) $2x(x + 3) = x(x - 2) - 7$	20) $x^2 - 10x = 4x - 49$	21) $16x^2 - 59 = 5$

Solve by the square root method.

22) $9x^2 + 32 = 4$	23) $(x + 4)^2 - 8 = 10$	24) $10 + (x-3)^2 = 3$
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Find the discriminant & state the number and type of solutions. Then solve using the quadratic formula.

25) $3x^2 - 2x + 4 = 0$	26) $2x^2 + 3x - 2 = 2x + 1$
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Which method would be best for each equation? You may only use each method once.

a. factoring

b. square roots

c. quadratic formula

27)  $x^2 + 2x + 8 = 0$

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

29)  $x^2 - 8 = 0$

30) Given  $f(x) = 24 - 3x^2$ , find the real zeros.

31) Write a quadratic function,  $f(x)$ , in standard form with integral coefficients with the given zeros.  $(-1/4, 0)$  and  $(4, 0)$

32) The quadratic equation with integral coefficients,  $x^2 + bx + c = 0$ , has roots 11 and -5. Find the sum of  $b$  and  $c$ .

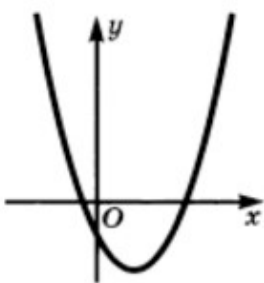
33) Let  $D$  be the value of the discriminant. Match each with the value of its discriminant. You may use the choices more than once.

a.  $D > 0$

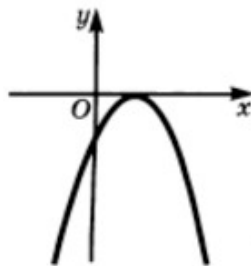
b.  $D < 0$

c.  $D = 0$

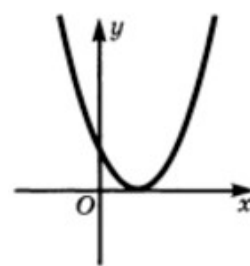
i)



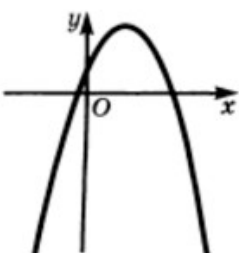
ii)



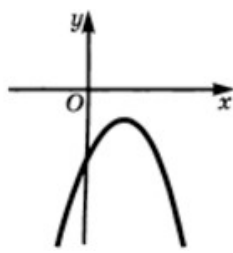
iii)



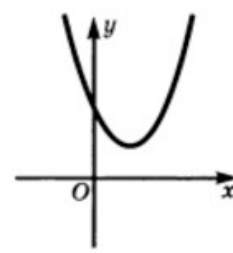
iv)



v)



vi)



Set up an equation then solve.

34) The product of two consecutive positive even integers is equal to 24 more than four times the first number. Find the numbers.

35) The length of a photograph is 1 cm less than twice the width. The area is  $45 \text{ cm}^2$ . Find the perimeter of the rectangle.

36) Eight more than the square of a number is the same as six times the number. Find the number. Find all possible values for the number.

A small projectile is launched. The height,  $h(t)$  in feet of the projectile after  $t$  seconds can be modeled by the function  $h(t) = -16t^2 + 112t$

37) At what time will the ball reach its maximum height?

38) What is the maximum height?

39) At what time will the ball hit the ground?

# KEY:Alg2 Unit 3 Test Review

1.  $\{-9\}$
2.  $\{40\sqrt{2}\}$
3.  $\{20i\sqrt{2}\}$
4.  $\left\{-\frac{3}{2}\right\}$
5.  $\left\{\frac{1}{2}\right\}$
6.  $\left\{\frac{\sqrt{6}}{2}\right\}$
7.  $\{-30i\}$
8.  $\{3 - \sqrt{5}\}$
9.  $\left\{\frac{7\sqrt{3}}{6}\right\}$
10.  $\{5 - 12i\}$
11.  $\{16 + 10i\}$
12.  $\{21 + 3i\}$
13.  $\{-5 - 12i\}$
14.  $\left\{-\frac{5i}{8}\right\}$
15.  $\left\{\frac{35}{29} + \frac{14}{29}i\right\}$
16.  $\left\{-\frac{7}{2}, -1\right\}$
17.  $\{0, -7\}$
18.  $\left\{\frac{7}{3}, -7\right\}$
19.  $\{-7, -1\}$
20.  $\{7\}$ , Mult. of 2
21.  $\{\pm 2\}$
22.  $\left\{\pm \frac{2i\sqrt{7}}{3}\right\}$
23.  $\{-4 \pm 3\sqrt{2}\}$
24.  $\{3 \pm i\sqrt{7}\}$
25.  $D = -44$ ; No Real Solutions  
2 Complex, Non-Real Solutions  
(2 distinct Imaginary Solutions)  
 $\left\{\frac{1}{3} \pm \frac{i\sqrt{11}}{3}\right\}$  OR  $\left\{\frac{1}{3} \pm \frac{\sqrt{11}}{3}i\right\}$
26.  $D = 25$ ; Two distinct Real Solutions  $\left\{-\frac{3}{2}, 1\right\}$
27. C
28. A
29. B
30.  $\{\pm 2\sqrt{2}\}$
31.  $f(x) = 4x^2 - 15x - 4$
32.  $\{-61\}$
33. SEE BELOW
- 33i. A
- 33ii. C
- 33iii. C
- 33iv. A
- 33v. B
- 33vi. B
34.  $\{6\}$  (1<sup>st</sup> pos. even integer)  
 $\{8\}$  (2<sup>nd</sup> pos. even integer)
35.  $\{28 \text{ cm}\}$
36.  $\{2, 4\}$
37.  $\{3.5 \text{ sec}\}$
38.  $\{196 \text{ ft}\}$
39.  $\{7 \text{ sec}\}$