Algebra II with Trigonometry
Ch 1 Practice Test (1.1-1.9) SHOW ALL WORK!!!

Name: Key
Block: _____

1. The expression $\frac{1}{5+2i}$ is equivalent to: $\frac{(5-2i)}{(5-2i)} = \frac{5-2i}{25+4} = \frac{5-2i}{29}$

a. $\frac{5}{29}+\frac{2}{29}i$ b. $\frac{5}{29}-\frac{2}{29}i$ c. $\frac{5}{21}-\frac{2}{21}i$ d. $\frac{5}{21}+\frac{2}{21}i$ e. None of the Above

2. The expression i^2 is equivalent to:

a. 1 b. i c. -1 d. $-i$ e. None of the Above

3. The expression $(-2+6i)-(3+4i)$ is equivalent to:

$-2+6i-3-4i$

a. $-6-24i$ b. $18+10i$ c. $-5+2i$ d. $-6+24i$ e. None of the Above

4. Use the discriminant to determine the number and nature of the solutions to: $2x^2+4x-3=0$

$16-4(2)(-3)$ $16+24=40$

a. 2 Real solutions b. 1 Real Solution c. 2 Imaginary solutions d. None of the above

5. If the discriminant of an equation is -49, then the roots (solutions) are:

a. 2 Real solutions b. 2 Imaginary solutions C. 1 real solution d. None of the above

6. Solve by factoring: $x^2-64=0$

$(x+8)(x-8)=0$
$-8 \quad 8$

a. -8 b. 16, -4 c. 8 d. 8, -8 e. None of the above

7. Solve $x^2-6x+4=0$ by completing the square:

$x^2-6x+9=-4+9$
$\sqrt{(x-3)^2}=\sqrt{5}$
$x-3=\pm\sqrt{5}$
$+3 \quad +3$
$x=3\pm\sqrt{5}$

a. $3+\sqrt{5}, -3+\sqrt{5}$ b. $3\pm2\sqrt{5}$ c. $-3\pm\sqrt{5}$ d. $3\pm\sqrt{5}$

e. None of the above

8. Solve by using square roots $\sqrt{(x-3)^2} = \sqrt{9}$

$x-3 = \pm 3$

$+3 \quad +3$

$x = 3 \pm 3$

6

0

a. -6, 6 (b) 0,6 c. -6,0 d. -3,3 e. None of the above

9. Solve $x^2 + 3x - 5 = 0$ by using the quadratic formula:

$$\frac{-3 \pm \sqrt{9-4(1)(-5)}}{2(1)} = \frac{-3 \pm \sqrt{29}}{2}$$

a. $x = \frac{3 \pm \sqrt{29}}{2}$ b. $\frac{\pm 3\sqrt{29}}{2}$ c. $x = \frac{-29 \pm \sqrt{3}}{2}$ (d.) $x = \frac{-3 \pm \sqrt{29}}{2}$

e. None of the above

10. Solve the following equation by factoring: $2x^2 - 7x - 4 = 0$

$(2x+1)(x-4) = 0$

$-\frac{1}{2} \quad 4$

a. -2, 1 (b) $-\frac{1}{2}, 4$ c. 2, -1 d. $\frac{1}{2}, -4$ e. None of the Above

11. In the quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, $b^2 - 4ac$ is called the

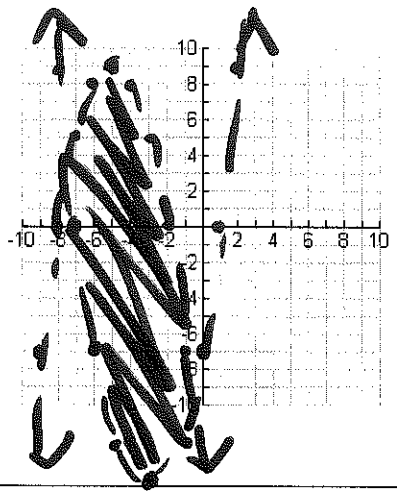
a) denominator b) real root. (c) discriminant. d) imaginary root e) None of the Above

12. The zeros of a function are the same as the - ? -.

a) vertex (b) roots

c) y-intercepts d) none of these

13. Graph the system of inequalities on the given axes: $y > x^2 + 6x - 7$, $y < -x^2 - 10x - 16$



$y = x^2 + 6x - 7$

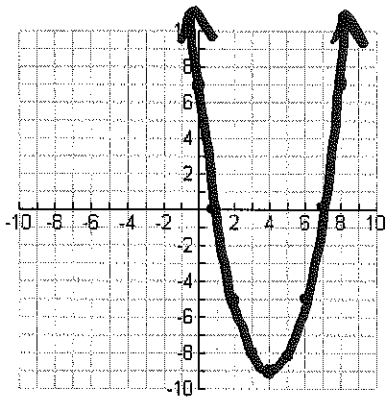
$x = \frac{-6}{2(1)} = -3$

$(-3, -16)$ $9 - 18 - 7$

$y = -x^2 - 10x - 16$

$x = \frac{10}{2(-1)} = -5$ $y = -25 + 50 - 16$

$(-5, 9)$



14. Solve $x^2 - 8x \leq -7$ using either a table, a graph, or algebra:

$x^2 - 8x + 7 \leq 0$

$(4, -9)$

$1 \leq x \leq 7$

15. Solve for x by the following methods:

$6 \quad 1$

$3 \quad 2$ $\qquad$ $5 \quad 1$

a. $x^2 - 225 = 0$ (square roots)

$\sqrt{x^2} = \sqrt{225}$

$x = \pm 15$

b. $x^2 - 3x - 4 = 0$ (quadratic formula)

$\frac{3 \pm \sqrt{9 - 4(1)(-4)}}{2(1)}$

$\frac{3 \pm 5}{2}$

c. $6x^2 + 7x - 5 = 0$ (factoring)

$(3x + 5)(2x - 1) = 0$

$x = -\frac{5}{3}$ $x = \frac{1}{2}$

a. $x = \pm 15$

$x = 4, -1$

c. $x = -\frac{5}{3}, \frac{1}{2}$

16. Given the function $f(x)=2x^2-8x+6$, answer the following:

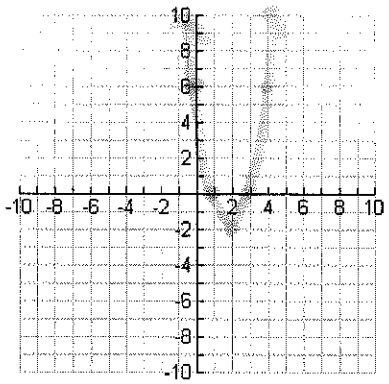
a. Find the vertex: (2, -2)

b. What is the axis of symmetry? $x=2$

c. Does it open up or down? up

d. Construct the graph..make sure to include vertex, axis of symmetry , 2 points to the left and right of vertex...

X	Y
0	6
1	0
2	-2
3	0
4	6



17. Given the function $y=-1(x-1)^2+2$, answer the following..

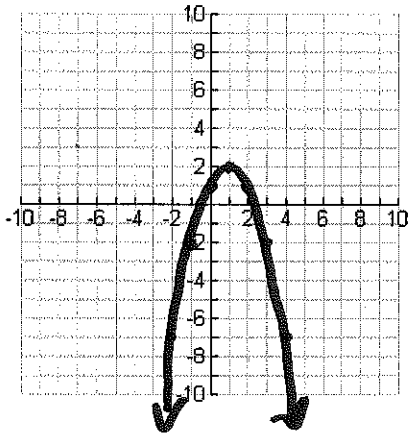
a. Find the vertex: (1, 2)

b. What is the axis of symmetry? $x=1$

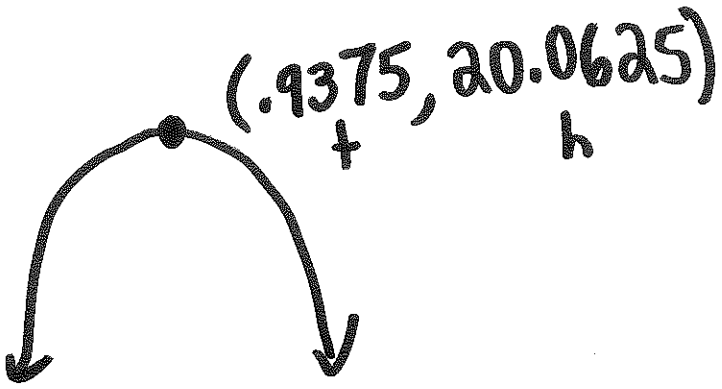
c. Does it open up or down? down

d. Construct the graph..make sure to include vertex, axis of symmetry:

X	Y
-1	-2
0	1
1	2
2	1
3	-2

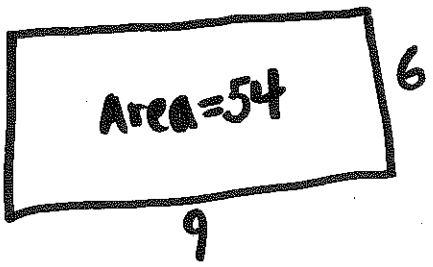


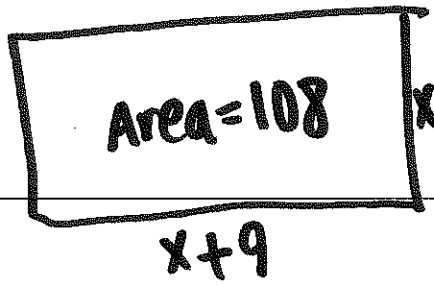
18. The height "*h*" (*in feet*) of a volleyball after "*t*" seconds is given by $h = -16t^2 + 30t + 6$. What is the maximum height that the volleyball reaches, and after how many seconds does this occur?



20.0625 ft in .9375 sec

19. You own a rectangular lot that measures 9 meters by 6 meters, but want to expand it to twice the original area by adding the same distance "x" to both the length and the width. Write and solve an equation to find the value of x that accomplishes your goal, plus give the new dimensions of the newly expanded lot.





$(x+6)(x+9) = 108$

$x^2 + 15x + 54 = 108$

$x^2 + 15x - 54 = 0$

$(x+18)(x-3) = 0$

~~$x = -18$~~ $x = 3$

9 meters x 12 meters

20. Simplify:

a. $\sqrt{-16}$ $\sqrt{16}\sqrt{-1}$ $= 4i$

b. $\sqrt{-12}$ $\sqrt{4}\sqrt{3}\sqrt{-1}$ $= 2i\sqrt{3}$

c. $16i^2$ $16(-1)$ $= -16$

d. $-5i^2$ $-5(-1)$ $= +5$

e. $(2-3i)+(5+2i)$

$7-i$

f. $(16+3i)-(2-5i)$

$14+8i$

g. $(2-3i)\div(5+2i)$ $\dfrac{(2-3i)(5-2i)}{(5+2i)(5-2i)} = \dfrac{10-4i-15i+6(-1)}{25-4(-1)} = \dfrac{4-19i}{29}$

h. $(16+3i)\div(2-5i)$ $\dfrac{(16+3i)(2+5i)}{(2-5i)(2+5i)} = \dfrac{32+80i+6i+15(-1)}{4-25(-1)}$

$= \dfrac{17+86i}{29}$