Algebra 2—H
5.1-5.4 and Ch. 4 review

Name_____

HW #_____
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DO ALL PROBLEMS ON YOUR OWN PAPER.

Factor completely over the real numbers.

1. $5x^3-405x$
2. $16x^3y-88x^2y^2+121xy^3$
3. $3x^4+3x^2-6$
4. $x^2+14x+49-400y^2$
5. $(x-y)^3(x+y)-(x-y)(x+y)^3$
6. $25x^{4n}+30x^{2n}+9$
7. $2x-3\sqrt{x}-2$

Solve over the real numbers.

8. $(x-4)(x+4)=6x$
9. $x^6-2x^4+x^2=0$
10. $30x^3-38x^2-20x=0$
11. $\dfrac{6}{(x-1)^2}-\dfrac{1}{x-1}=1$
12. $\left(\dfrac{x-1}{x+3}\right)^2-4\left(\dfrac{x-1}{x+3}\right)+3=0$
13. $3(5x-2)^2+5=194$

Solve over the complex numbers (your answers may include imaginary numbers).

14. $-x^2+4=2x^2-5$
15. $\dfrac{x^2}{5}+8=-1$
16. $\left(1+2x^2\right)^2+6\left(1+2x^2\right)-7=0$

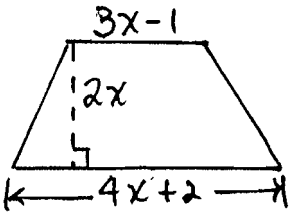
Simplify completely. Write answers in *a + bi* form as needed.

17. $\sqrt{\dfrac{7}{40}}$
18. $\sqrt{108}$
19. $\left(8-3\sqrt{2}\right)^2$
20. $\dfrac{4\sqrt{5}+2}{2\sqrt{5}-3}$
21. $2i\sqrt{20}\cdot 4i\sqrt{3}$
22. $\left(2i\sqrt{5}\right)^2$
23. $3\sqrt{-150}$
24. $\sqrt{-6}\cdot\sqrt{-30}$
25. $-i+(7-5i)-3(2-3i)$
26. $2i(1-4i)^3$
27. $\dfrac{4-i\sqrt{3}}{4+i\sqrt{3}}$
28. $\dfrac{5}{2i}$
29. $|6-5i|$

30. Find the zeros of the function $y = -4x^2 - 24x$.

31. Find the value of x for the trapezoid shown, if its area is 66 sq. units.

(area = $\frac{1}{2}$(height)(base 1 + base 2))



32. Write $y = -3(x+7)(x-8)$ in standard parabola form.

33. The drag force F (in pounds) of water on a swimmer can be modeled by the formula $F = 1.35s^2$, where s is the swimmer's speed (in miles per hour). How fast must you swim to generate a drag force of 10 pounds? Round the answer to the nearest tenth.

34. Find all possible sets of three consecutive integers such that the square of the second integer is 40 more than the sum of all three integers.

35. Graph $-3+2i$ in the complex plane.

36. Graph the parabola $y = 2x^2 - 4x + 5$. Identify vertex, axis of symmetry, and two other points. Give the maximum or minimum value of the function.

37. Graph the parabola $y = \frac{-1}{2}(x+2)^2 + 4$. Identify vertex, axis of symmetry, and two other points.

38. Graph the parabola $y = -3(x-4)(x+3)$. Identify x-intercepts, vertex, and axis of symmetry.

39. Solve for matrix X: $4X - \frac{1}{2}\begin{bmatrix} -6 & -4 \\ 8 & 2 \end{bmatrix} = \begin{bmatrix} 19 & 10 \\ -2 & 3 \end{bmatrix}$

Review!

40. Find the inverse of the matrix: $\begin{bmatrix} 3 & -2 \\ 5 & -2 \end{bmatrix}$

41. Multiply: $\begin{bmatrix} -1 & 2 & -3 & 4 \end{bmatrix}\begin{bmatrix} -2 & 0 \\ 4 & -1 \\ 3 & 2 \\ 0 & -3 \end{bmatrix}$