COLLEGE REVIEW MATH – SEMESTER EXAM REVIEW

CHAPTER 1 "STUFF"

If point A = (-1, 7) and B = (4, 5) find: 1) The length of \overline{AB} 2) The midpoint of \overline{AB}

3) If A lies on the line with equation: 2y - 3x = 11 (yes/no)

Using the equation:	4y + 5x = 16, find:	
4) The x-intercept	5) The y-intercept	

6) The slope

7) The slope parallel to the answer for #6

8) The slope perpendicular to the answer for #6

Write a linear equation for each line described (y = mx + b).
9) Passes thru (6, -2) & (4, 2)
10) Passes thru (-3, -1) and is perpendicular to the line with equation: y - 3x = 11

Solve the system of equations using either the substitution, elimination or graphing methods. This includes your graphing calculator!

11)	$\mathbf{x} = 2\mathbf{y} - 5$	12)	$2\mathbf{x} + 3\mathbf{y} = 2$
	6y - 3x = 15		6x - y = -4

Simplify.		
13) $\sqrt{-50} - \sqrt{-8}$	14) $(2+3i)^2$	15) $(8-9i) - (10-7i)$

CHAPTER 2 "STUFF"

Use the function: $f(x) = x^2 - 8x + 10$ to find: 16) f(-1) 17) f(11) 18) $f(\sqrt{7})$

19)
$$f(2i)$$
 20) $f(3+2i)$ 21) Its zeros

Use synthetic division to find: 22) The remainder for $(x^4 - 8x^2 + 5x - 1) \div (x + 3)$ 23) The remaining roots for $6x^3 + 11x^2 - 4x - 4$ if x = -2 is one of the three.

Use the equation:
$$y = 2x^2 - 20x + 87$$
 and the formula $x = \frac{-b}{2a}$ to find:

24) The vertex (or minimum coordinates)

25) The axis of symmetry

26) Direction in which it opens (up or down)?

Use the graph to the right to determine:

- 27) The number of single, double and triple roots.
- 28) One possible equation to represent the graph.



29) The number (or "a") that would need to begin the equation for #28 if (-2, 600) lies on the line. Find the roots (or solutions) for each equation.

30)
$$n^2 - 15n + 56 = 0$$
 31) $\frac{q+2}{q} = \frac{q}{q-7}$ 32) $8x^4 + 18x^2 = 5$

33)
$$y^4 - 4y^3 + 11y^2 - 28y + 28 = 0$$
 34) $3x^3 - 4x^2 - 27x + 36 = 0$

Write a quadratic equation given its roots. Use the formulas: sum
$$\frac{-b}{a}$$
 and product $\frac{c}{a}$
35) $\frac{5}{3}$ and -4 36) $2 \pm 9i$ 37) $\frac{1 \pm 5\sqrt{3}}{2}$

CHAPTER 3 "STUFF"

Solve each inequality.

38)
$$8x - 5 < 6x + 33$$

39) $\frac{z + 12}{-5} \ge -7$
40) $|2b - 9| > 11$

41)
$$n(n+1)^2(n-3) \le 0$$
 42) $x^3 - 2x^2 \ge 48$ 43) $\frac{(x+5)^3}{(x-1)^2} > 0$

It would pay to know which formula goes to which circumstance.

distance formula:
$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
 midpoint formula: $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
slope formula: $\frac{y_2 - y_1}{x_2 - x_1}$ quadratic formula: $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
slope-int. form: $y = mx + b$ max/min/vertex: $x = \frac{-b}{2a}$
sum & product formulas: $sum = \frac{-b}{a}$ product $= \frac{c}{a}$