## COLLEGE REVIEW MATH - SEMESTER EXAM REVIEW

## CHAPTER 1 'STUFF"

If point $A=(-1,7)$ and $B=(4,5)$ find:

1) The length of $\overline{A B}$
2) The midpoint of $\overline{A B}$
3) If A lies on the line with equation: $2 \mathrm{y}-3 \mathrm{x}=11$ ( $\mathrm{yes} / \mathrm{no}$ )

Using the equation: $4 y+5 x=16$, 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 $(y=m x+b)$.
9) Passes thru $(6,-2) \&(4,2)$
10) Passes thru $(-3,-1)$ and is perpendicular to the line with equation: $\mathrm{y}-3 \mathrm{x}=11$

Solve the system of equations using either the substitution, elimination or graphing methods. This includes your graphing calculator!
11)

$$
\begin{aligned}
& x=2 y-5 \\
& 6 y-3 x=15
\end{aligned}
$$

12) 

$2 x+3 y=2$
$6 x-y=-4$

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

## CHAPTER 2 "STUFF"

Use the function: $f(x)=x^{2}-8 x+10$ to find:
16) $\mathrm{f}(-1)$
17) $\mathrm{f}(11)$
18) $f(\sqrt{7})$
19) $f(2 i)$
20) $f(3+2 i)$
21) Its zeros

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

Use the equation: $\mathrm{y}=2 \mathrm{x}^{2}-20 \mathrm{x}+87$ and the formula $x=\frac{-b}{2 a}$ 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) $\mathrm{n}^{2}-15 \mathrm{n}+56=0$
31) $\frac{q+2}{q}=\frac{q}{q-7}$
32) $8 x^{4}+18 x^{2}=5$
33) $y^{4}-4 y^{3}+11 y^{2}-28 y+28=0$
34) $3 \mathrm{x}^{3}-4 \mathrm{x}^{2}-27 \mathrm{x}+36=0$

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) $2 \pm 9 i$
37) $\frac{1 \pm 5 \sqrt{3}}{2}$

## CHAPTER 3 "STUFF"

Solve each inequality.
38) $8 x-5<6 x+33$
39) $\frac{z+12}{-5} \geq-7$
40) $|2 b-9|>11$
41) $\mathrm{n}(\mathrm{n}+1)^{2}(\mathrm{n}-3) \leq 0$
42) $x^{3}-2 x^{2} \geq 48$
43) $\frac{(x+5)^{3}}{(x-1)^{2}}>0$

It would pay to know which formula goes to which circumstance.
distance formula: $\quad \sqrt{\left(x_{2}-x_{1}\right)^{2}+\left(y_{2}-y_{1}\right)^{2}}$
slope formula: $\frac{y_{2}-y_{1}}{x_{2}-x_{1}}$
quadratic formula: $\frac{-b \pm \sqrt{b^{2}-4 a c}}{2 a}$
slope-int. form: $\quad y=m x+b$
max/min/vertex: $\quad x=\frac{-b}{2 a}$
sum \& product formulas: $\quad$ sum $=\frac{-b}{a} \quad$ product $=\frac{c}{a}$

