Algebra II – Trig
WS 5.1-5.3

Name _____
Period _____

Simplify:

1. $\frac{2^3c^4t^2}{2^2c^4t^2}$ 2	2. $4x(2x^{-2}y^2)(3x^3y^{-7})$ $\frac{24x^2}{y^5}$
3. $x^5x^{-4}x$ x^2	4. $(-2t^2)^3$ $-8t^6$
5. $\frac{-27x^3(-x^7)}{16x^4}$ $\frac{27x^6}{16}$	6. $-2(gh)(g^3h^5)$ $-2g^4h^6$
7. $\frac{-6a^4bc^2}{36a^7b^2c}$ $\frac{-1c}{6a^3b}$	8. $-(4w^{-3}z^{-5})(8w)^2$ $\frac{-256}{wz^5}$
9. $5y^2(y^2+2y-3)$ $5y^4+10y^3-15y^2$	10. $\left(\frac{2}{3w^2x^3y^6}\right)^{-2}$ $\frac{9w^4x^6y^{12}}{4}$

Simplify:

11. $(3bc-9b^2-6c^2)+(4c^2-b^2+5bc)$ $8bc-10b^2-2c^2$	12. $-9xy+11x^2-14y^2-(6y^2-5xy-3x^2)$ $-4xy+14x^2-20y^2$
13. $2x(3x^2-5)$ $6x^3-10x$	14. $(5-4x)(3-2x)$ $8x^2-22x+15$
15. $(5d+1)(5d-1)$ $25d^2-1$	16. $m^2n^3(-4m^2n^2-2mnp-7)$ $-4m^4n^5-2m^3n^4p-7m^2n^3$
17. $(x+y)(x^2-3xy+2y^2)$ $x^3-2x^2y-xy^2+2y^3$	18. $(a-5)^2$ $a^2-10a+25$

Use long division to simplify:

19. $(x^3-8x^2+4x-9)\div(x-4)$ $x^2-4x-12-\frac{57}{x-4}$	20. $(x^4-4x^3+x^2+7x-2)\div(x-2)$ x^3-2x^2-3x+1

Use synthetic division to simplify:

21. $3v^2-7v-10\div(v-4)$ $3v+5+\frac{10}{v-4}$	22. $(4p^4-17p^2+14p-3)\div(2p-3)$ $2p^3+3p^2-4p+1$

22. Find a zero of the polynomial on TI84.
Divide the zero from the polynomial.
Use a quadratic method to find the remaining zeros.

$$f(x) = x^3 + 5x^2 + 9x + 45$$

TI84 $x_1 = -5$

$x_2 = 3i$ $x_3 = -3i$

23. Find f(-2) for the f(x) in #22

f(-2) = 39

For each of the following graphs,
a) describe the end behavior
b) determine whether it represents and odd or even degree polynomial
c) state the number of real zeros

24.

$f(x) \to +\infty$ as $x \to +\infty$

$f(x) \to -\infty$ as $x \to -\infty$

ODD degree (f(x) in different directions)

5 real zeros

25.

$f(x) \to +\infty$ as $x \to +\infty$

$f(x) \to +\infty$ as $x \to -\infty$

EVEN degree (f(x) in same directions)

2 real zeros