Name:_____

Honors Calculus Summer Packet

Due: First day of school. Must show all work on a separate piece of paper.

Factor.

1. $8x^3 + 125$	2. $250x^4 + 128x$	3. $x^3 - 216y^3$
4. $35xy - 5x - 56y + 8$	5. $5x^3 - 10x^2 - 3x + 6$	6. $15x^2 - 27x - 6$
7. $7x^2 - 44x + 12$	8. $6x^2 - 30x - 300$	9. $36x^2 - 49y^2$

Solve.

10. $2x^2 + 6x = -9$

Apply the remainder theorem to evaluate.

11. $f(x) = x^5 - 47x^3 - 16x^2 + 8x + 52$ at $x = 7$	12. $f(x) = x^4 - 3x^3 - 17x^2 + 2x - 7$ at $x = 3$

Divide using long division.

13. $2x^4 + x^2 - 3x + 7 \div x + 2$	14. $3x^6 + 2x + 5 \div x - 1$

Simplify.

15. $\dfrac{5}{n+5} + \dfrac{4n}{2n+6}$	16. $\dfrac{\dfrac{25}{4}}{\dfrac{1}{5} - \dfrac{4}{25}}$
17. $\dfrac{5-x}{x^2-25}$	18. $\left(4a^{\frac{5}{3}}\right)^{\frac{3}{2}}$
19. Let $f(x) = 2x + 1$ and $g(x) = 2x^2 - 1$. Find $g(f(m + 2))$.	20. Find the domain of each function. a) $f(x) = x^2 - 6x$ b) $f(x) = \sin x$ c) $f(x) = \dfrac{1}{5-x}$ d) $f(x) = \sqrt{4 - x}$

Simplify using the GCF.

21. $3x^2(2x^3 + 2)^{-3} - 6x(2x^3 + 2)^{-4}$	22. $-6\pi x^2(2x^2 - 1)^{-3/2} + 3\pi(2x^2 - 1)^{-1/2}$

Complete the table.

Unit Circle Table

Degrees	Radians	Coordinates	sin( )	cos ( )	tan ( )	csc ( )	sec ( )	cot ( )
0°								