Name Key Period

2.4-2.6 Quiz Review
Algebra 2 with Trigonometry

Factor the polynomial completely.

1. $27y^3 - 8$ $(3y)^3 - (2)^3$ $(3y-2)(9y^2+6y+4)$	2. $1000x^3 + y^3$ $(10x)^3 + (y)^3$ $(10x+y)(100x^2-10xy+y^2)$
3. $7x^9 - 63x^5$ $7x^5(x^4-9)$ $7x^5(x^2+3)(x^2-3)$	4. $2x^8 - 32x^4$ $2x^4(x^4-16)$ $2x^4(x^2+4)(x^2-4)$ $2x^4(x^2+4)(x+2)(x-2)$
5. $3x^3 + 21x^2 + 2x + 14$ $3x^2(x+7) + 2(x+7)$ $(3x^2+2)(x+7)$	6. $10x^4 - 15x^3 + 4x - 6$ $5x^3(2x-3) + 2(2x-3)$ $(5x^3+2)(2x-3)$
7. $6x^7 - 48x^5 + 72x^3$ $6x^3(x^4-8x^2+12)$ $6x^3(x^2-6)(x^2-2)$	8. $3x^6 - 33x^3 - 78$ $3(x^6-11x^3-26)$ $3(x^3-13)(x^3+2)$

Use a graphing calculator to graph the function. Approximate the real zeros of the function. Round to the nearest 2 decimal places.

9. $f(x) = x^3 - x^2 - 8x + 5$ -2.68, .61, 3.07	10. $f(x) = 3x^3 - x^2 - 5x + 3$ -1.39, .72, 1
11. $f(x) = x^4 - 9x^2 - 4x + 12$ -2, 1, 3	12. $f(x) = x^3 + 5x^2 - 4x - 20$ -5, -2, 2

Divide. (using either polynomial long division or synthetic division)

13. $(x^3 + 4x^2 - x - 1) \div (x + 3)$ $\begin{array}{r\|rrrr} -3 & 1 & 4 & -1 & -1 \\ & \downarrow & -3 & -3 & 12 \\ \hline & 1 & 1 & -4 & 11 \end{array}$ $x^2 + x - 4 + \frac{11}{x+3}$	14. $(4x^3 + 2x^2 - 3x + 7) \div (x - 1)$ $\begin{array}{r\|rrrr} 1 & 4 & 2 & -3 & 7 \\ & \downarrow & 4 & 6 & 3 \\ \hline & 4 & 6 & 3 & 10 \end{array}$ $4x^2 + 6x + 3 + \frac{10}{x-1}$
15. $(4x + 2x^3 + 7x^2 - 1) \div (x + 1)$ $\begin{array}{r\|rrrr} -1 & 2 & 7 & 4 & -1 \\ & \downarrow & -2 & -5 & 1 \\ \hline & 2 & 5 & -1 & 0 \end{array}$ $2x^2 + 5x - 1$	16. $(x^3 + 9x^2 - 37x - 165) \div (x - 5)$ $\begin{array}{r\|rrrr} 5 & 1 & 9 & -37 & -165 \\ & \downarrow & 5 & 70 & 165 \\ \hline & 1 & 14 & 33 & 0 \end{array}$ $x^2 + 14x + 33$
17. $(4x^3 + 8x^2 - 25x - 50) \div (x + 2)$ $\begin{array}{r\|rrrr} -2 & 4 & 8 & -25 & -50 \\ & \downarrow & -8 & 0 & 50 \\ \hline & 4 & 0 & -25 & 0 \end{array}$ $4x^2 - 25$	18. $(x^4 - 4x^3 + 8x - 32) \div (x - 4)$ $\begin{array}{r\|rrrrr} 4 & 1 & -4 & 0 & 8 & -32 \\ & \downarrow & 4 & 0 & 0 & 32 \\ \hline & 1 & 0 & 0 & 8 & 0 \end{array}$ $x^3 + 8$

A polynomial f(x) and a factor of f(x) are given. Factor f(x) completely.

19. $f(x) = x^3 - 6x^2 + 5x + 12$ given $x - 4$ is a factor

$$\begin{array}{r|rrrr} 4 & 1 & -6 & 5 & 12 \\ & \downarrow & 4 & -8 & -12 \\ \hline & 1 & -2 & -3 & 0 \end{array}$$

$(x-4)(x^2-2x-3)$

$(x-3)(x+1)$

$(x-4)(x-3)(x+1)$

20. $f(x) = 2x^3 - 11x^2 + 3x + 36$ given $x - 3$ is a factor

$3 \cdot 4$
$2 \cdot 6$
$1 \cdot 12$

$2 \cdot 1$

$$\begin{array}{r|rrrr} 3 & 2 & -11 & 3 & 36 \\ & \downarrow & 6 & -15 & -36 \\ \hline & 2 & -5 & -12 & 0 \end{array}$$

$(x-3)(2x^2-5x-12)$

$(2x+3)(x-4)$

$(x-3)(2x+3)(x-4)$

21. $f(x) = x^3 + x^2 - 16x - 16$ given $x - 4$ is a factor

$$\begin{array}{r|rrrr} 4 & 1 & 1 & -16 & -16 \\ & \downarrow & 4 & 20 & 16 \\ \hline & 1 & 5 & 4 & 0 \end{array}$$

$(x-4)(x^2+5x+4)$

$(x+1)(x+4)$

$(x-4)(x+1)(x+4)$