

Name _____

Date: _____

PC Review Sheet for Exam 2 Quarter 2

Show all work on a separate sheet of paper. Make sure to study your notes and homework as well.

1. Show that $(x - 2)$ is a factor of $P(x) = x^3 - 3x^2 - 10x + 24$, and find the other two factors.
2. What is the remainder when $3x^{107} + 14x^{35} - 16x$ is divided by $(x - 1)$?
3. What is the remainder when $14x^{10} - 2x^3 - 17$ is divided by $(x + 2)$?
4. Determine if $(x + 3)$ is a factor of $f(x) = x^3 + x^2 - 5x + 3$
5. Determine if $(x + 1)$ is a factor of $f(x) = x^3 - 13x^2 + 23x - 11$
6. List all of the possible rational roots for each of the following polynomials:
 - a) $f(x) = 3x^2 + 2x - 1$
 - b) $f(x) = x^6 - 64$
 - c) $f(x) = -2x^2 + 5x + 3x^3 - 8$
 - d) $f(x) = 50x - 25 + 4x^5 + 30x^3 + 4x^5$
7. If $(x + 16)$ is a factor of $f(x)$ then what is one of the zeros?
8. If $(2x - 3)$ is a factor of $f(x)$ then what is one of the roots?
9. If $f(x) = (x - 3)(2x - 1)(3 + x)$ then what are the roots?
10. If $f(8) = 0$, what is one of the factors of $f(x)$?
11. If $f\left(\frac{3}{2}\right) = 0$, what is one of the factors of $f(x)$?

12. Use the given zero(s) to find all of the zeros for each of the following:

a. $f(x) = 5x^4 - 46x^3 + 84x^2 - 50x + 7$; zeros: 7, 1

b. $f(x) = 2x^3 + 9x^2 + 19x + 15$; zero: $-\frac{3}{2}$

13. Use the given root(s) to find the complete factorization for each of the following:

a. $f(x) = 3x^3 + 11x^2 + 5x - 3$; zero: -1

b. $f(x) = 3x^4 - 24x^2 - 6x + 5 - 10x^3$; zero: -1 (double root)

14. Find the complete factorization and the complete solution set for each of the following:

a. $f(x) = x^3 + 3x^2 - 10x - 24$

b. $f(x) = 2x^3 + 3x^2 - 23x - 12$

c. $f(x) = x^4 + 3x^3 - x^2 - 7x - 4$

d. $f(x) = x^5 - 6x^4 + 11x^3 - 2x^2 - 12x + 8$

e. $f(x) = x^5 - 11x^3 + 28x$

15. Sketch the graphs for 14 a, b, d and e.

16. When the function $f(x)$ is divided by $2x + 3$, the quotient is $3x^2 - 2x + 2$ and the remainder is 5. Find the function, $f(x)$, and write the result in standard form.

17. When the function $f(x)$ is divided by $3x - 1$, the quotient is $2x^2 + x - 3$ and the remainder is -4 . Find the function, $f(x)$, and write the result in standard form.