

Honors Precalculus (BC)
Summer Work

Name _____

For maximum benefit, neatly show all work. The goal is to remind yourself of some important ideas, not to rush through (it's optional, after all).

1. Consider the polynomial function $f(x) = x^2 - 3x - 28$
 - (a) Factor f
 - (b) Identify the zeros of f , along with their multiplicities (the number of times they occur).
 - (c) Sketch a graph of f making use of the zeroes you discovered in part (b) and your knowledge of end-behavior.
2. Consider the polynomial function $f(x) = x^3 - x^2 - 8x + 12$
 - (a) Factor f
 - (b) Identify the zeros of f , along with their multiplicities (the number of times they occur).
 - (c) Sketch a graph of f making use of the zeroes you discovered in part (b) and your knowledge of end-behavior.
3. Consider the polynomial function $f(x) = -x^4 - 8x^3 + 7x^2 + 50x - 48$
 - (a) Factor f
 - (b) Identify the zeros of f , along with their multiplicities (the number of times they occur).
 - (c) Sketch a graph of f making use of the zeroes you discovered in part (b) and your knowledge of end-behavior.
4. Consider the polynomial function $f(x) = -x^5 + 6x^4 - 12x^3 + 8x^2$
 - (a) Factor f
 - (b) Identify the zeros of f , along with their multiplicities (the number of times they occur).
 - (c) Sketch a graph of f making use of the zeroes you discovered in part (b) and your knowledge of end-behavior.
5. Write the partial fraction decomposition of the expression: $\frac{5}{x^2 + x - 6}$. Then check your result.
6. Write the partial fraction decomposition of the expression: $\frac{x}{(x - 1)(x^2 + x + 1)}$. Then check your result.
7. Write the partial fraction decomposition of the expression: $\frac{x^2 + 5}{(x + 1)(x^2 - 2x + 3)}$. Then check your result.
8. Solve the linear system
$$\begin{cases} 3x - y + 14z = 7 \\ 2x + 2y + 3z = 0 \\ x - 12y - 18z = 33 \end{cases}$$