Polynomials Unit Test Review
Fall 2021

1) Factor: $2x^3 + 6x^2$

2) Factor: $x^2 + 9x - 10$

3) Factor: $x^2 - 64$

4) Factor: $x^3 - 5x^2 - 16x + 80$

5) Factor: $x^5 - 4x^3 + 4x^2 - 4$

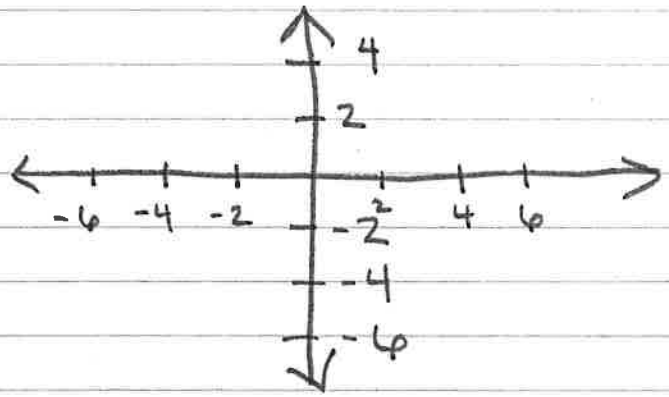
6) Factor and find the roots of the following function. Sketch the graph.

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

Factors: _____

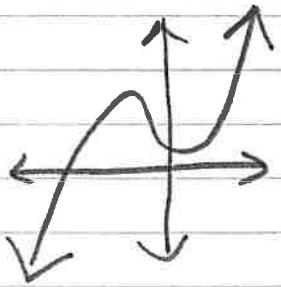
Zeros/Roots: _____

Sketch:

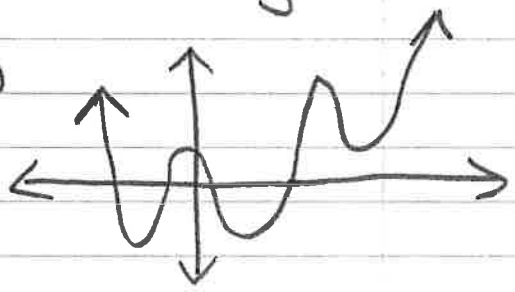


7) Write the end behavior for each of the following.

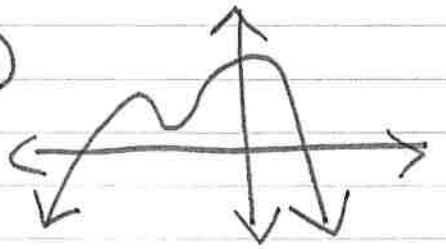
a)



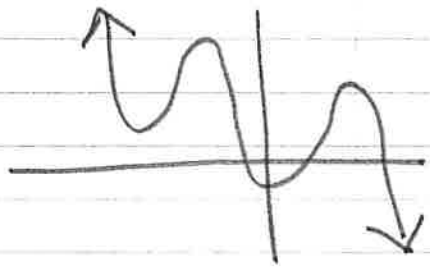
b)



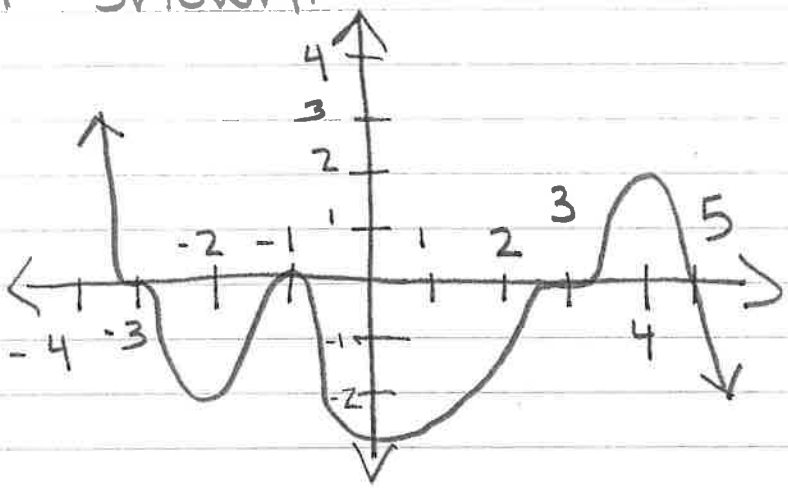
c)



d)

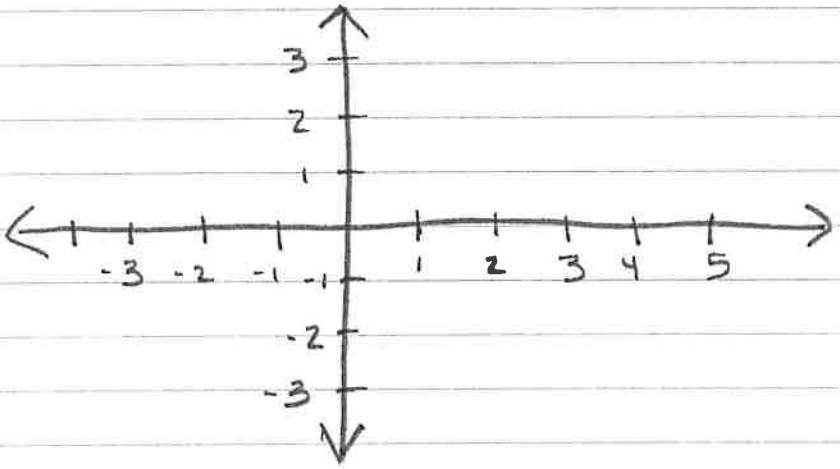


8) Write the function for the graph shown.



9) Sketch a graph of:

$$f(x) = (x-3)^2(x+2)^2(x-1)$$



10) Find the remainder:

$$\frac{x^5 - 4x^3 + 3x^2 - 2x + 1}{x - 2}$$

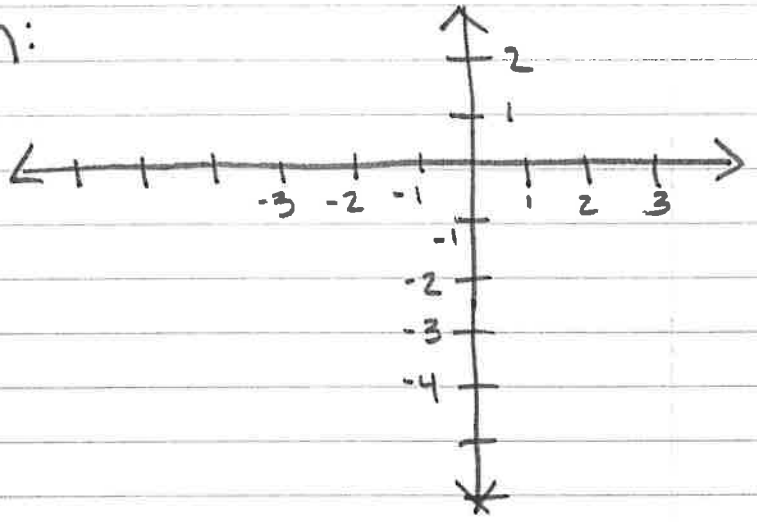
11) Is $(x+3)$ a factor of $(2x^3 + 5x^2 - 6x - 9)$? Explain why!

12) Is $(x+1)$ a factor of $(2x^3 - x^2 - 15x - 2)$? Explain why.

13) Given that $(x-1)$ is a factor of (x^3+6x^2-x-6), identify the roots and sketch a graph of the function.

Roots: _____

Sketch:



14) Given $f(-2)=0$, for the polynomial $f(x)$, which of the following is true? Check ALL that are correct.

- ☐ $(x-2)$ is a factor of $f(x)$.
- ☐ $x=-2$ is a root of $f(x)$.
- ☐ $(x+2)$ is a factor of $f(x)$.
- ☐ $x=2$ is a root of $f(x)$.
- ☐ No information about roots or factors can be drawn.