SM3 Unit2 Review Name:_____

1) Find the linear factorization of $x^2 + 8x + 12$.

2) Given a 6th degree polynomial with complex root $x = -4i$, how many real roots could it have?

3) Find the linear factorization of $2x^2 - 7x - 15$.

4) Find the linear factorization of $10x^3 + 25x^2 + 40x + 100$, given that $x - 2i$ is a factor.

5) How many complex factors does the polynomial $x^5 + 4x^3 - 8x^2$ have?

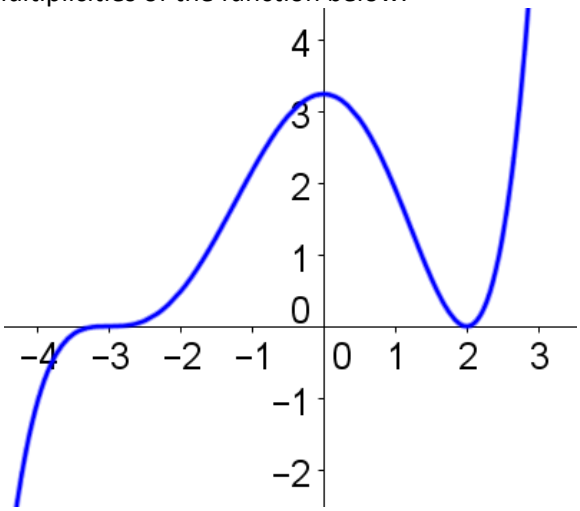
6) List the possible rational roots of $x^4 - 8x^2 + 12$ using the rational roots theorem.

7) List the possible rational roots of $3x^4 + 5x^3 - 2x + 6$ using the rational roots theorem.

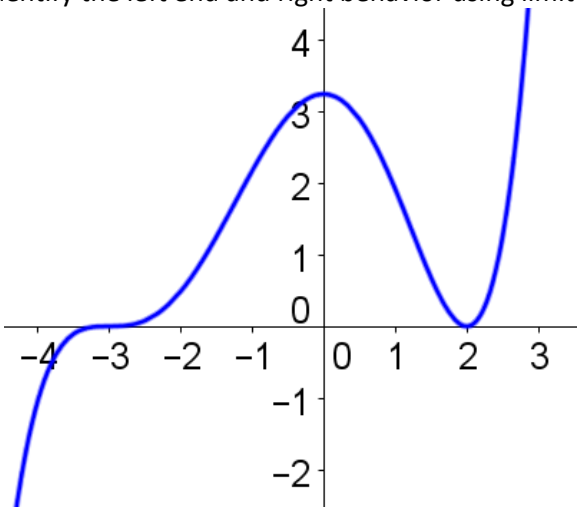
8) Given $x = 2i$ is a complex root of $x^3 + 3x^2 + 4x + 12$ what are the remaining roots?

9) Sketch the graph below that represents the function, $f(x) = (x + 3)^2(x - 1)(x + 4)$?

10) Describe the roots with multiplicities of the function below.



11) Given the graph below, identify the left end and right behavior using limit notation.



12) Identify the **right** end behavior of the given function of $k(x) = -3(x-4)^2(x+5)^6$

13) How many relative minima does $p(x) = (x-2)(x+1)(x-4)(x+5)$ have?

14) State the multiplicity of the roots of $q(x) = -4x^2(x+1)^6(x-9)^9$.

15) Given $\lim_{x\to\infty} v(x) = \infty$, $\lim_{x\to-\infty} v(x) = \infty$, $v(4) = v(-1) = 0$
Write a second degree polynomial that could be $v(x)$?

Comprehensive Review (because each test includes items from each previous test)

16) Expand the binomial: $(2x+3)^3$

17) Find the a^2 term of the binomial expansion of $(3a-8)^8$

18) Simplify using polynomial long division $\dfrac{x^3+2x+18}{x^2+2x-3}$

You should consider reworking problems from homework assignments with which you struggled….