Algebra 2A **Name _____**

5.1 **Assignment**

State the degree and leading coefficient of each polynomial in one variable. If it is not a polynomial in one variable, explain why.

1. $(3x^2+1)(2x^2-9)$

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

3. $\frac{2}{x^2}+3x-12$

4. $27+3xy^3-12x^2y^2-10y$

Use *synthetic substitution* to find $p(-2)$ and $p(3)$ for each function.

5. $p(x)=x^3-x^5$

6. $p(x)=-x^5+4x^3$

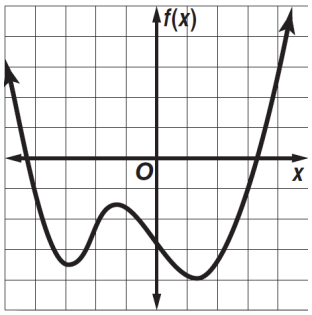
Use *direct substitution* to find each value if $p(x)=3x^2-4$ and $r(x)=2x^2-5x+1$.

7. $p(8a)$

8. $r(a^2)$

9. $r(x+2)$

For each graph, *describe the end behavior*, determine whether it represents an *odd-degree or even-degree* polynomial function and state the *number of real zeroes*.

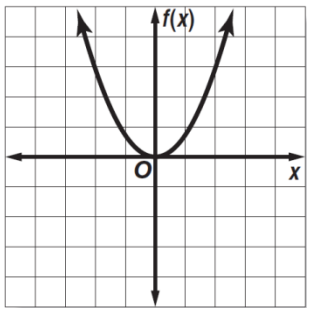
10. 

End Behavior: $\lim_{x\to-\infty} f(x)=$

$\lim_{x\to+\infty} f(x)=$

Odd or Even Degree: _____

Number of Real Zeros: _____

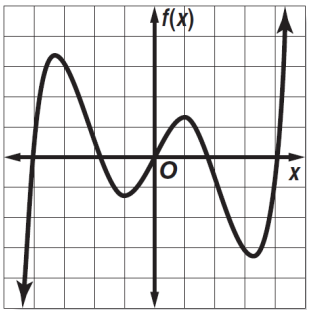
11. 

End Behavior: $\lim_{x\to-\infty} f(x)=$

$\lim_{x\to+\infty} f(x)=$

Odd or Even Degree: _____

Number of Real Zeros: _____

12. 

End Behavior: $\lim_{x\to-\infty} f(x)=$

$\lim_{x\to+\infty} f(x)=$

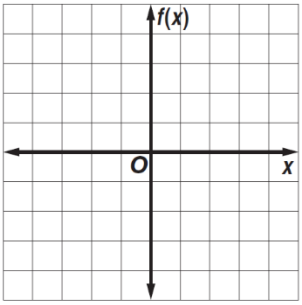
Odd or Even Degree: _____

Number of Real Zeros: _____

Algebra 2A **Name** _____
5.2 **Assignment**

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

x	f(x)
−2	
−1	
0	
1	
2	
3	
4	

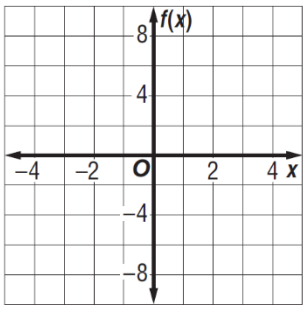


Zeros:

Relative maxima/minima:

2. $f(x) = x^3 - 1.5x^2 - 6x + 1$

x	f(x)
−2	
−1	
0	
1	
2	
3	
4	

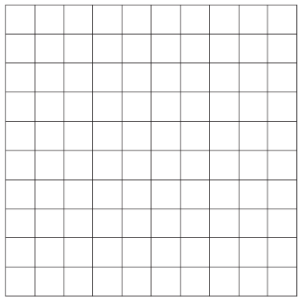


Zeros:

Relative maxima/minima:

3. $f(x) = .75x^4 + x^3 - 3x^2 + 4$

x	f(x)

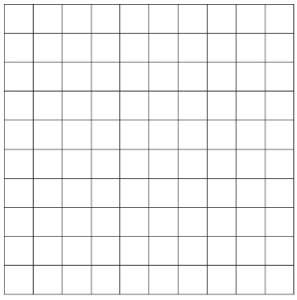


Zeros:

Relative maxima/minima:

4. $f(x) = x^4 + 4x^3 + 6x^2 + 4x - 3$

x	f(x)



Zeros:

Relative maxima/minima:

Algebra 2A **Name** _____

5.3 **Assignment**

Write each expression in quadratic form, if possible.

1. $10x^4 + 3x^2 - 11$

2. $5x^8 + x^2 + 6$

3. $28x^6 + 25x^3$

4. $32x^5 - 56x^3 + 8x$

5. $x^{\frac{2}{3}} + 7x^{\frac{1}{3}} - 10$

6. $x^{\frac{1}{5}} + 29x^{\frac{1}{10}} + 2$

Solve each equation.

7. $x^4 - 7x^3 - 18x^2 = 0$

8. $x^4 - 625 = 0$

9. $x^4 - 49x^2 = 0$

10. $4x^6 - 9x^4 = 0$

11. $x^4 - 24 = -2x^2$

12. $x^{\frac{1}{2}} - 5x^{\frac{1}{4}} + 6 = 0$

13. $x^{\frac{4}{3}} - 29x^{\frac{2}{3}} + 100 = 0$

14. $x^3 - 28x^{\frac{3}{2}} + 27 = 0$

15. $x - 10\sqrt{x} + 25 = 0$

Algebra 2A **Name** _____
5.4 **Assignment**

Given a polynomial and one of its factors, find the remaining factors of the polynomial. Some factors may not be binomials.

1. $x^3 + 3x^2 - 6x - 8;\ (x-2)$

2. $x^3 + 7x^2 + 7x - 15;\ (x-1)$

3. $x^3 + 5x^2 - 2x - 24;\ (x-2)$

4. $x^3 - x^2 - 14x + 24;\ (x+4)$

5. $18x^3 + 9x^2 - 2x - 1;\ \ (2x+1)$

6. $6x^3 + 5x^2 - 3x - 2;\ \ (3x-2)$

Algebra 2A **Name** _____
5.5 **Assignment**

Find all the zeros of each function.

Step 1: Find at least one real (exact) zero with your graphing calculator.
Step 2: Use synthetic substitution until the depressed polynomial is a degree two.
Step 3: Solve the quadratic equation by the method of your choice.

1. $h(x) = 2x^3 + 3x^2 - 65x + 84$

2. $p(x) = x^3 - 3x^2 + 9x - 7$

3. $h(x) = x^3 - 7x^2 + 17x - 15$

4. $f(x) = x^4 + 50x^2 + 49$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

5. $-5,\ 3i$

6. $7,\ 4i$

Algebra 2A **Name _____**
5.5 extra practice **Assignment**

Find all of the rational zeros of each function.

1. $f(x)=x^3-2x^2+5x-4$

2. $f(x)=x^3-3x^2-4x+12$

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

4. $f(x)=3x^3+2x^2+27x+18$

Algebra 2A **Name** _____
5.6 **Assignment**

Find $(f+g)(x)$, $(f-g)(x)$, $(f\cdot g)(x)$, and $\left(\frac{f}{g}\right)(x)$ **for each** $f(x)$ **and** $g(x)$**.**

1. $f(x)=2x+1$, $g(x)=x-3$

Sum:

Difference:

Product:

Quotient:

2. $f(x)=x^2+7x+12$, $g(x)=x^2-9$

Sum:

Difference:

Product:

Quotient:

Find both $[g\circ h](x)$ **and** $[h\circ g](x)$**.**

3. $g(x)=3x$, $h(x)=x-4$

4. $g(x)=x-2$, $h(x)=3x^2+1$

If $f(x)=x^2$, $g(x)=5x$, and $h(x)=x+4$, find each value.

5. $f[g(1)]$

6. $g[h(-2)]$

7. $h[f(4)]$

8. $h[g(-3)]$

9. $h[f(20)]$