Determine the degree, leading term, constant coefficient, and end behavior of the following polynomials.

1. $f(x) = 4x^2 + 14x^3 - 6x^6 - 4x - 1$

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

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

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

5. $Q(x) = x(x-5)^5(x-7)^3(x+10)(x+6)^2$

6. $f(x) = (x+5)^2(2x-5)(x^2+5x+6)(3-x)$

Sketch a graph of the polynomials below. Label all intercepts on your graph. *You should not use your calculator on these problems.* You should sketch these as we did in class [i.e. by noting any important properties of the graphs (end behavior, etc.)].

7. $y = 3(x-3)(x-1)(x+2)$

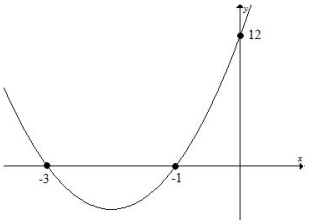
8. $f(x) = -(x+2)^2(x-1)(x-4)$

9. $g(x) = -x^3 + x^2 + 6x$

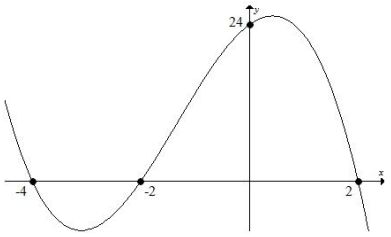
10. $y = x^7 - 8x^5 + 16x^3$

Determine a possible formula for the polynomials shown below.

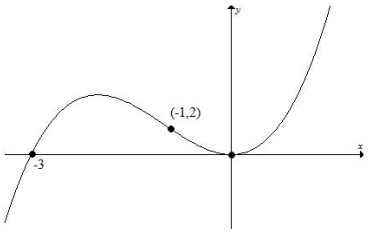
11.



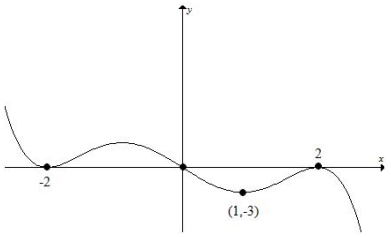
12.



13.



14.



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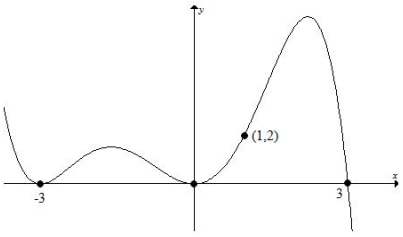
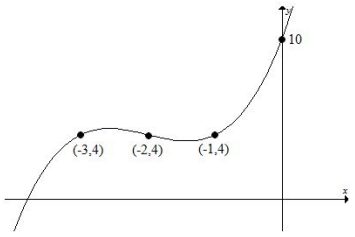


16.



17. Find the equation of the function $f(x)$ given the following table of values and that $f(x)$ is a degree 3 polynomial.

x	0	1	2	3	4	5
$f(x)$	-12	0	0	0	12	48

If you want, you can use this as an answer sheet for numbers 1-6.

1. $f(x) = 4x^2 + 14x^3 - 6x^6 - 4x - 1$

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____

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

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____

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

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____

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

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____

5. $Q(x) = x(x-5)^5(x-7)^3(x+10)(x+6)^2$

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____

6. $f(x) = (x+5)^2(2x-5)(x^2+5x+6)(3-x)$

Degree: _____

Leading term: _____

Constant Coefficient: _____

End Behavior: as $x \to -\infty$, $y \to$_____

as $x \to +\infty$, $y \to$_____