College Algebra
Section 3.2

Name: _____

Describe the transformations of $y = x^n$.

1. $y = x^3$

a. $f(x) = (x-4)^3$

b. $f(x) = -x^3 - 4$

c. $f(x) = -\frac{1}{4}x^3$

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

2. $y = x^6$

a. $f(x) = -(x-5)^6$

b. $f(x) = \frac{1}{8}x^6$

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

d. $f(x) = -\frac{1}{4}x^6 + 1$

Describe the left and right-hand behavior of the graph of the polynomial function. Make sure the polynomial is written in standard form.

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

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

5. $f(x) = \frac{1}{4}x^5 - x^4 + 8$

How many local maxima and minima does the polynomial have?

6. $y = -9x^2 + 7x + 6$

7. $y = x^4 - 3x^2 + 9$

8. $y = -2x^2 + 7x + 6$

9. $y = x^4 - 9x^2 + 7$

Find all real zeros of the polynomial function, determine the multiplicity of each zero, end behavior, x and y-intercepts, number of maximum turning points, graph the function. Check your answer using a graphing calculator.

10. $f(x) = x^2 - 9$

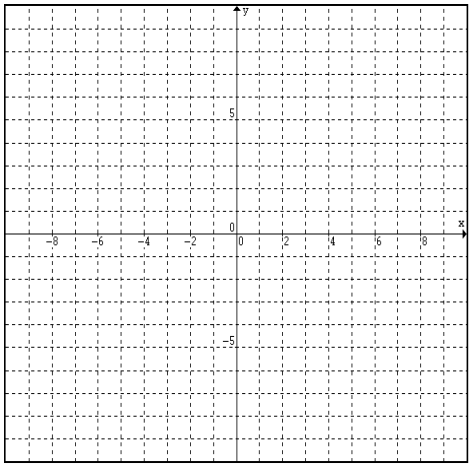
Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns:



11. $P(x) = (x - 1)(x + 1)(x - 2)$

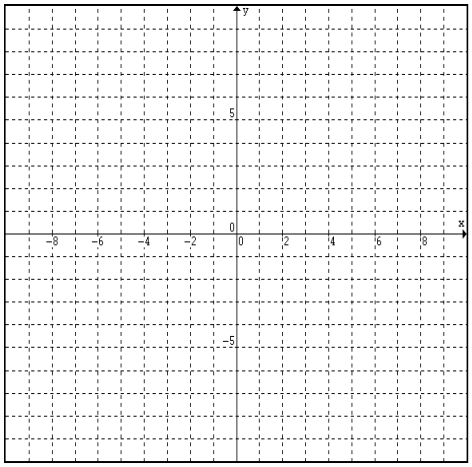
Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns:



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

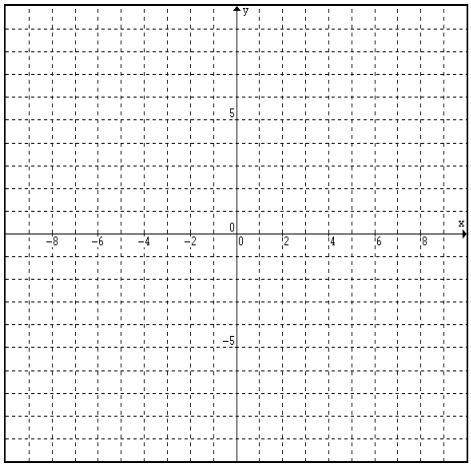
Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns:



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

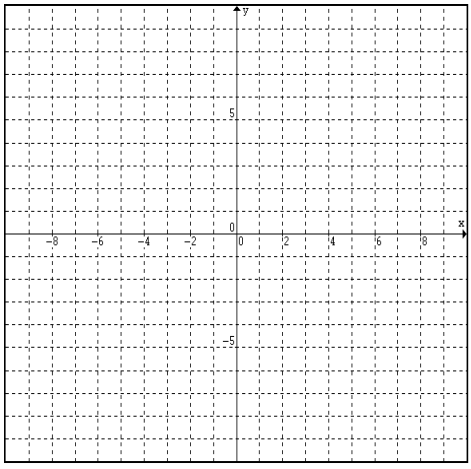
Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns:



14. $P(x) = x^4 - 4x^2 - 12$

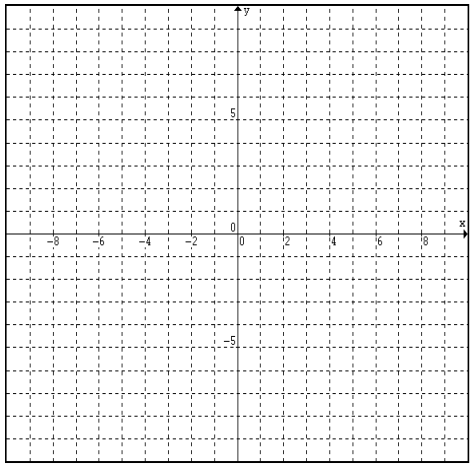
Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns:



15. $P(x) = x^3 + 2x^2 - 9x - 18$

Zeros:

End Behavior:

x-intercepts:

y-intercept:

Max Turns: