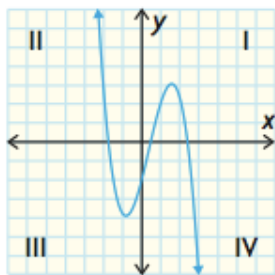


Name _____

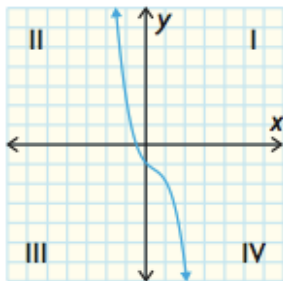
Date _____

Goal: Identify characteristics of the graphs of polynomial functions.

1. **end behaviour:** The description of the shape of the graph, from left to right, on the coordinate plane.
2. **turning point:** Any point where the graph of a function changes from increasing to decreasing or from decreasing to increasing; for example, this curve has two turning points, since the y -values change from decreasing to increasing to decreasing:



This curve does not have any turning points, since the y -values are always decreasing:



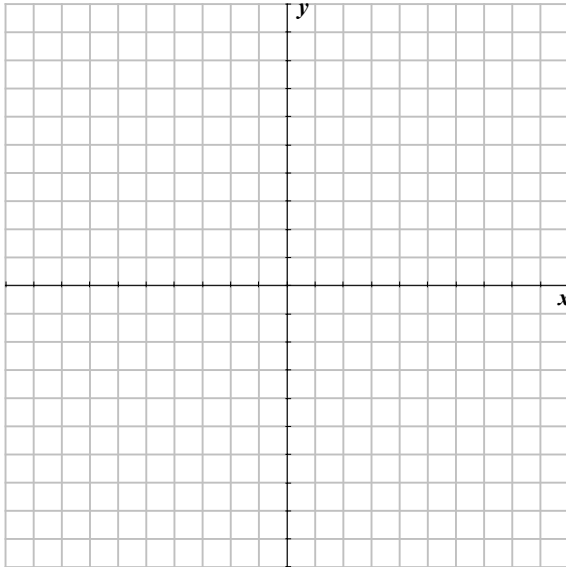
3. **cubic functions:** a polynomial function of the third degree, whose greatest exponent is three; for example, $f(x) = 5x^3 + x^2 - 4x + 1$
4. **domain:** the set of all possible values for the independent variable in a relation
5. **range:** the set of all possible values for the dependent variable as the independent variable takes on all possible values of the domain

INVESTIGATE the math

Graph each function below on the same set of axes using different colours and label the graphs:

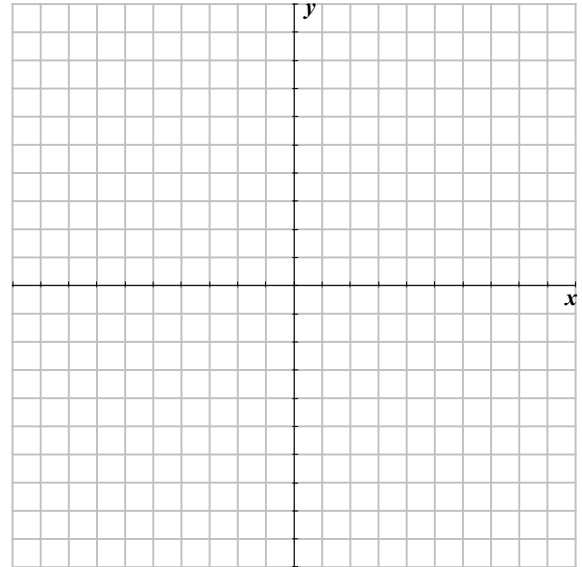
1. a) $y = 7$

b) $y = -2$



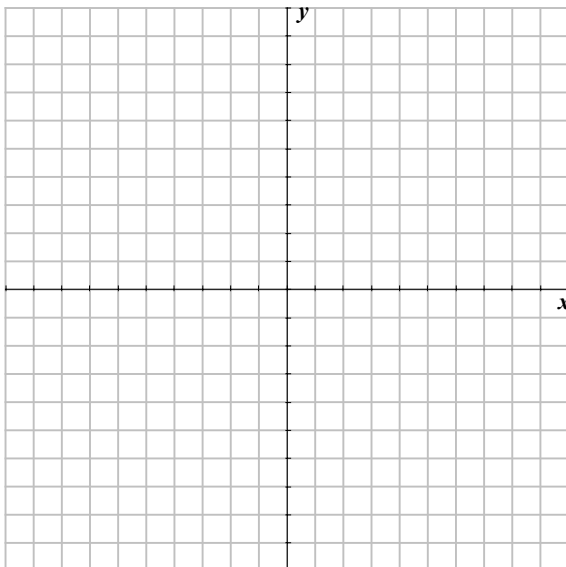
2. a) $y = 2x + 3$

b) $y = 3x - 7$



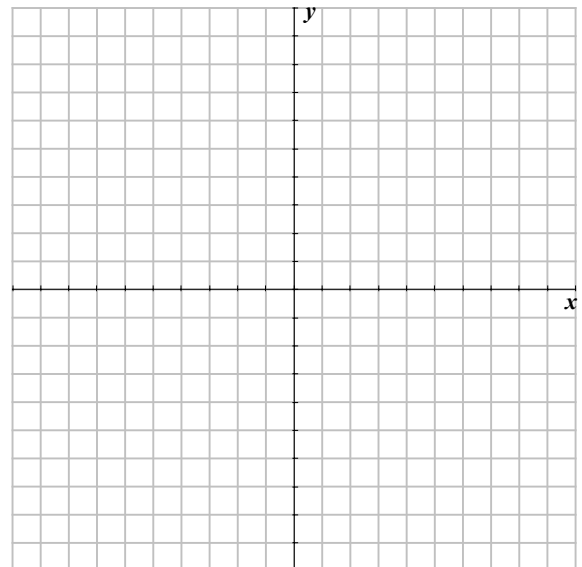
3. a) $y = -2x - 5$

b) $y = -x + 6$



4. a) $y = x^2$

b) $y = -x^2 - 4$

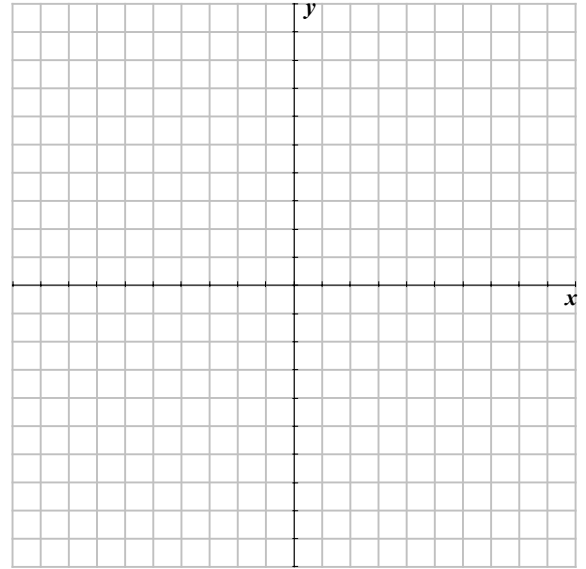
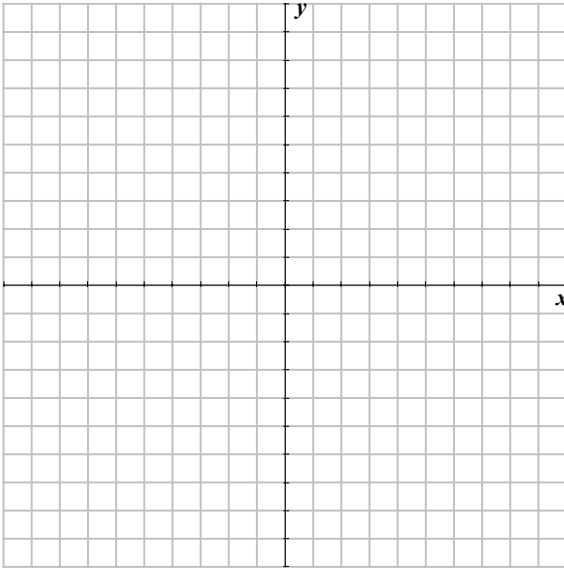


5. a) $y = 0.5x^2 + 4x + 8$

b) $y = -2x^2 + 8x - 4$

6. a) $y = x^2 + 6x + 6$

b) $y = -x^2 + 6x - 5$

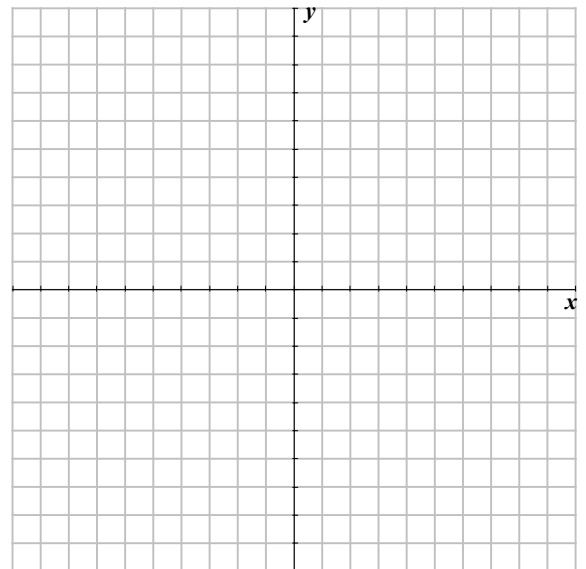
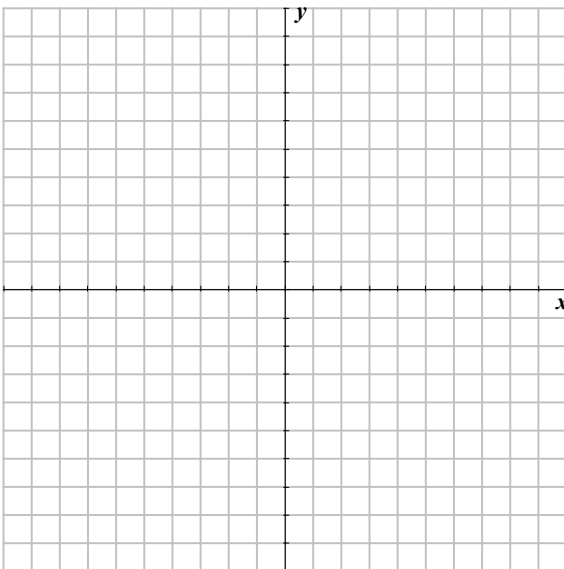


7. a) $y = x^3$

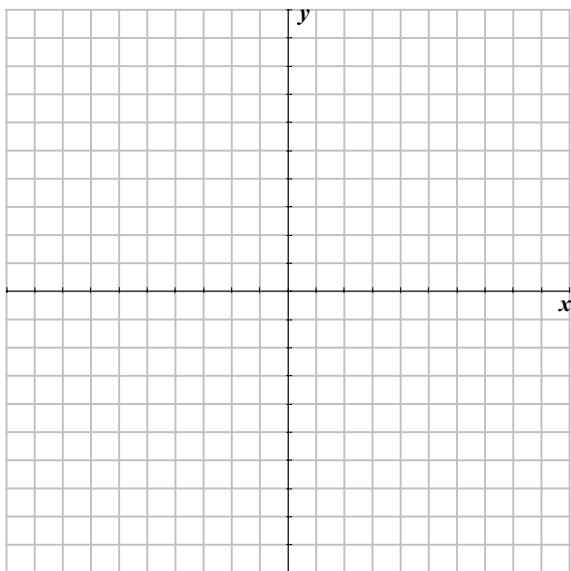
b) $y = x^3 + 6x^2 + 12x + 9$

8. a) $y = -x^3$

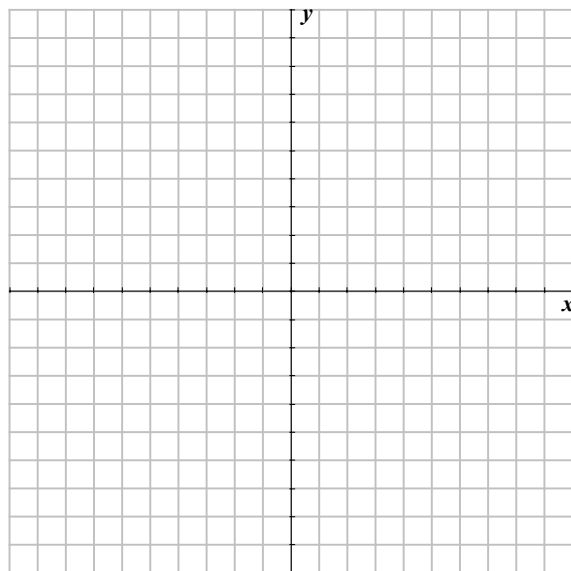
b) $y = -x^3 + 6x^2 - 12x + 8$



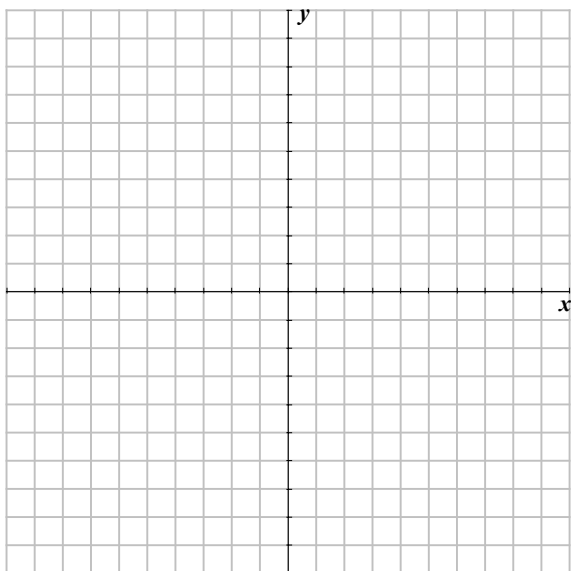
9. $y = x^3 + 3x^2$



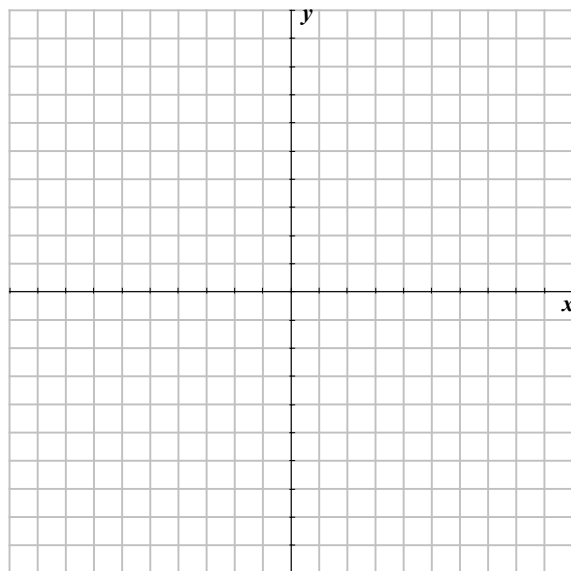
10. $y = -x^3 - 3x^2 + 4$



11. $y = x^3 + 2x^2 - 5x - 6$



12. $y = -x^3 - x^2 + 6x$



Polynomial Functions →

→

→

Degree →

Types of Polynomial Functions

Domain →

→

Range →

→