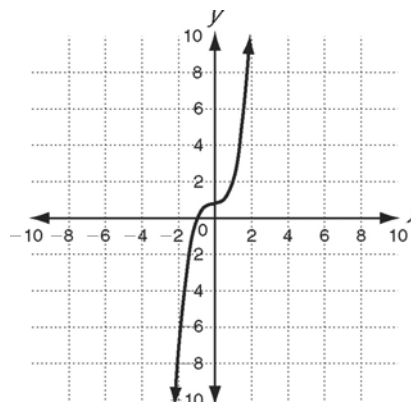Name _____ Date _____ Class_____

## Practice B
### *Transforming Polynomial Functions*

**For $f(x) = x^3 + 1$, write the rule for each function and sketch its graph.**

1. $g(x) = f(x + 4)$

_____

2. $g(x) = 3f(x)$

_____

3. $g(x) = f\left(\dfrac{1}{2}x\right)$

_____



**Let $f(x) = -x^3 + 4x^2 - 5x + 12$. Write a function $g(x)$ that performs each transformation.**
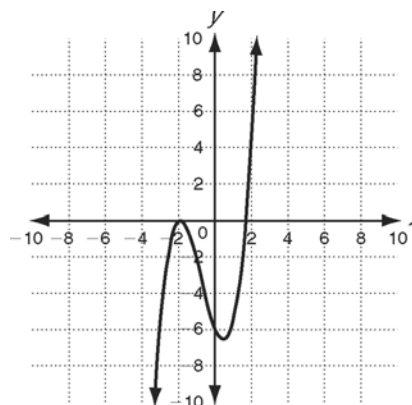
4. Reflect $f(x)$ across the $y$-axis

5. Reflect $f(x)$ across the $x$-axis

_____

**Let $f(x) = x^3 + 2x^2 - 3x - 6$. Describe $g(x)$ as a transformation of $f(x)$ and graph.**

6. $g(x) = \dfrac{1}{4}f(x)$

_____

7. $g(x) = f(x - 6)$

_____



**Write a function that transforms $f(x) = x^3 + 4x^2 - x + 5$ in each of the following ways. Support your solution by using a graphing calculator.**

8. Move 6 units up and reflect across the $y$-axis.

_____

9. Compress vertically by a factor of 0.25 and move 3 units right.

_____

**Solve.**

10. The number of participants, $N$, in a new Internet political forum during each month of the first year can be modeled by $N(t) = 4t^2 - t + 2000$, where $t$ is the number of months since January. In the second year, the number of forum participants doubled compared to the same month in the previous year. Write a function that describes the number of forum participants in the second year.

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