

## Assignment

Date \_\_\_\_\_ Period \_\_\_\_\_

**Simplify each expression.**

1)  $(13x^4y^2 + 4x^3y^4) + (3x^4y^2 + 12x^3y^2 + 14x^3y^4) + (6xy^3 + 9x^4y^2)$

2)  $(-11mn^2 + 4m) + (13mn^2 + 7m + 13mn) - (3mn^2 - 4m)$

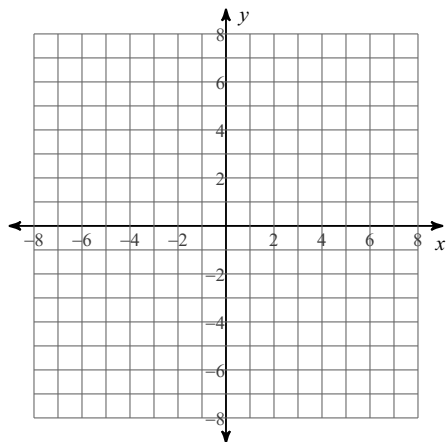
**Describe the end behavior of each function.**

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

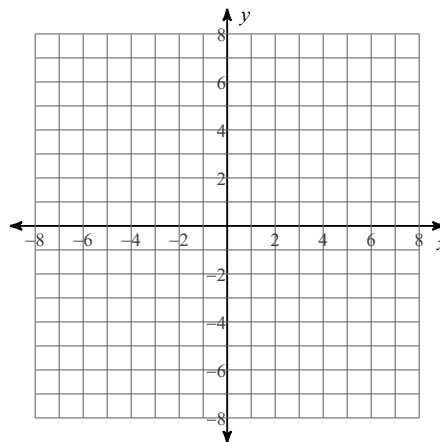
4)  $f(x) = x^4 - 3x^2 - 3x + 2$

**State the maximum number of turns the graph of each function could make. Then sketch the graph. Approximate the relative minima and relative maxima to the nearest tenth.**

5)  $f(x) = -x^3 + 3x$



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

**Factor each completely.**

7)  $2x^4 + 128x$

8)  $864a - 500a^4$

9)  $8x^3 - 343$

10)  $-8u^3 - 27$

11)  $8a^3 + 1$

12)  $27x^3 + 125y^3$

13)  $2m^4 - 54mn^3$

14)  $-500x^4 - 4xy^3$

15)  $125nm^3 - 8n^4$

16)  $343x^3 - y^3$

17)  $4x^3 - 2x^2 + 6x - 3$

18)  $16a^3 + 12a^2 + 12a + 9$

19)  $16x^3 + 12x^2 + 4x + 3$

20)  $15n^3 - 5n^2 + 9n - 3$

21)  $4n^3 + 3n^2 + 8n + 6$

22)  $10p^3 - 5p^2 + 4p - 2$

23)  $12v^3 - 9v^2 + 8v - 6$

24)  $3x^3 + 6x^2 + x + 2$

25)  $20k^3 - 25k^2 + 12k - 15$

26)  $3x^3 + x^2 + 6x + 2$

**Use the Remainder Thm to tell whether or not the value is a root.**

27)  $f(n) = -2n^4 + 5n^3 + 12n^2 + 5n - 19$  at  $n = 4$

28)  $f(x) = 5x^4 - 36x^3 + 32x^2 + 18x + 43$  at  $x = 6$

29)  $f(n) = -n^3 + 10n^2 - 20n - 28$  at  $n = 6$

30)  $f(a) = -5a^3 + 24a^2 - 11a - 21$  at  $a = 4$

31)  $f(m) = m^3 - m^2 - 12m - 5$  at  $m = 4$

32)  $f(x) = -5x^4 + 29x^3 + 4x^2 + 12x - 4$  at  $x = 6$