

EXERCISE A

State the degree and leading coefficient of each polynomial in one variable.
If it is *not* a polynomial in one variable, explain why.

1) $5x^6 - 8x^2$

2) $2b + 4b^3 - 3b^5 - 7$

3) $10x^3 + 5x + 2 - 3x^{-1}$

Find $p(3)$ and $p(-1)$ for each function.

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

5) $p(x) = x^4 - 3x^3 + 2x^2 - 5x + 1$

If $p(x) = 2x^3 + 6x - 12$ and $q(x) = 5x^2 + 4$, find each value.

6) $p(a^3)$

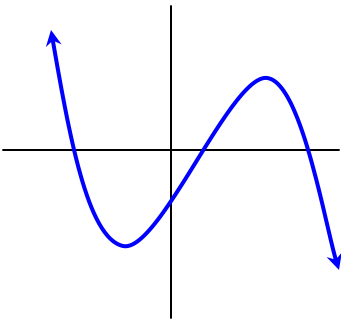
7) $-9[q(x)]$

8) $5[q(2a)]$

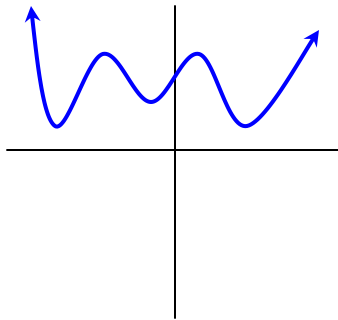
9) $3p(a) - q(a+1)$

For each graph below, a) describe the end behavior
b) determine if it has even or odd degree
c) state the number of real zeros

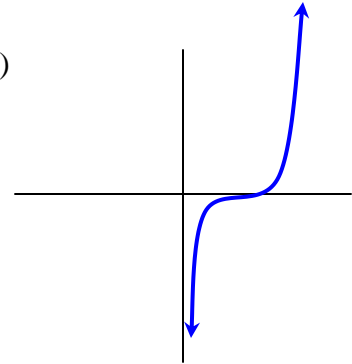
10)



11)



12)

**EXERCISE B**

State the degree and leading coefficient of each polynomial in one variable.
If it is *not* a polynomial in one variable, explain why.

13) $7 - x$

14) $(a + 1)(a^2 - 4)$

15) $a^2 + 2ab + b^2$

16) $c^2 + c - \frac{1}{c}$

17) $6x^4 + 3x^2 + 4x - 8$

18) $7 + 3x^2 - 5x^3 + 6x^2 - 2x$

Find $p(4)$ and $p(-2)$ for each function.

19) $p(x) = 2 - x$

20) $p(x) = 2x^3 - x^2 + 5x - 7$

21) $p(x) = x^5 - x^2$

If $p(x) = 3x^2 - 2x + 5$ and $r(x) = x^3 + x + 1$, find each value.

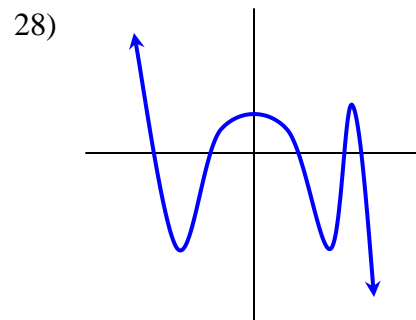
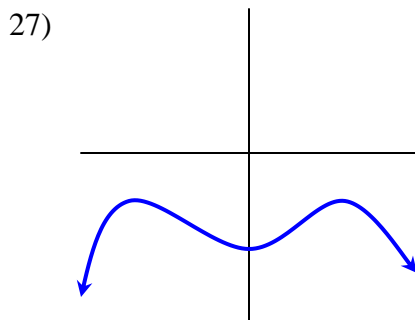
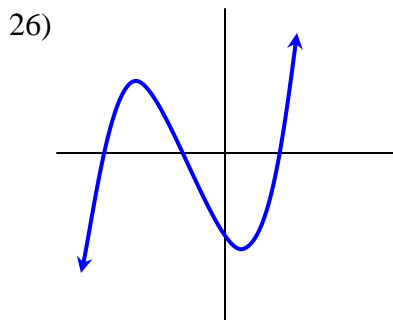
22) $r(3a)$

23) $4[p(x)]$

24) $r(x + 1)$

25) $p(x^2 + 3)$

For each graph below, a) describe the end behavior
 b) determine if it has even or odd degree
 c) state the number of real zeros



EXERCISE C

If $p(x) = 3x^2 - 2x + 5$ and $r(x) = x^3 + x + 1$, find each value.

29) $2[p(4x)]$

30) $r(x + 1) - r(x^2)$

31) $3[p(x^2 - 1)] + 4p(x)$

32) Sketch the graph of an odd-degree polynomial function with a negative leading coefficient and three real roots (zeros).

ANSWERS:

1) 6; 5

9) $6a^3 - 5a^2 + 8a - 45$

17) 4; 6

27) $-\infty, -\infty$; even; 0

3) is not,
negative exponent

11) $+\infty, +\infty$; even; 0

19) -2; 4

29) $96x^2 - 16x + 10$

5) 4, 12

13) 1; -1

21) 1008; -36

31) $9x^4 - 12x^2 - 8x$

7) $-45x^2 - 36$

15) is not,

23) $12x^2 - 8x + 20$

+ 50

2-variables

25) $3x^4 + 16x^2 + 26$