Practice 7.2: Polynomials

Write each polynomial in standard form, if not already. Then tell the degree, leading coefficient and name the type of polynomial.

1) $2x^5$

SF: It is already
Degree: 5; LC: 2
Quintic

2) $-2+4x^2+2x$

SF: $4x^2+2x-2$
Degree: 2; LC: 4
Quadratic

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

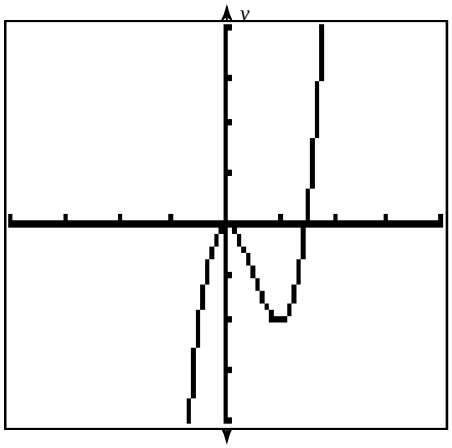
SF: It is already
Degree: 3; LC: -4
Cubic

4) $-5+10a$

SF: $10a-5$
Degree: 1; LC: 10
Linear

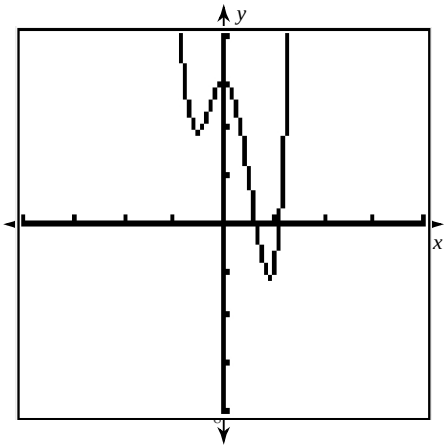
Sketch the graph of each function by making a table of values. Although it is not necessary, you may use your calculator to help giude you.

5) $f(x)=x^3-3x^2$



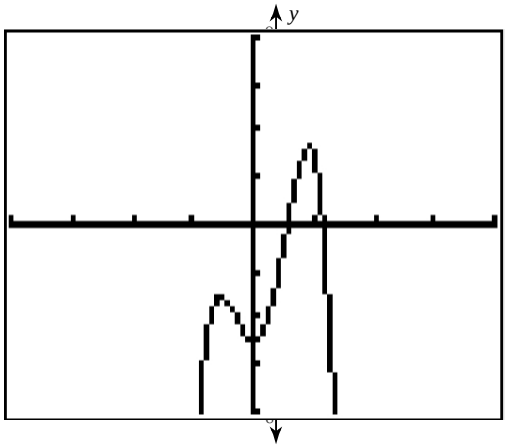
x	f(x)
-3	-54
-2	-20
-1	-4
0	0
1	-2
2	-4
3	0

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



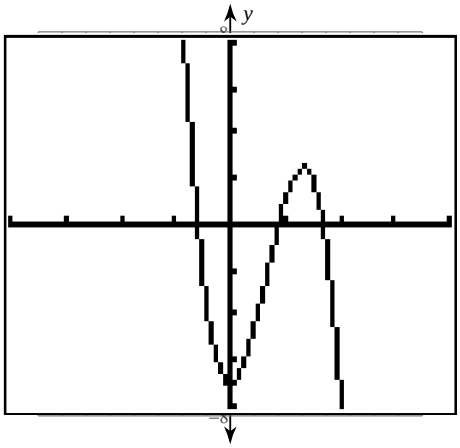
x	f(x)
-3	78
-2	14
-1	4
0	6
1	2
2	-2
3	24

7) $f(x)=-x^4+x^3+4x^2-5$



x	f(x)
-3	-77
-2	-13
-1	-3
0	-5
1	-1
2	3
3	-23

8) $f(x)=-x^3+4x^2-7$



x	f(x)
-3	56
-2	17
-1	-2
0	-7
1	-4
2	1
3	2

Evaluate each function at the given value using direct substitution.

9) $f(n)=-4n^3-21n^2+32$ at $n=-5$

$f(-5)=-4(-5)^3-21(-5)^2+32$

$f(-5)=7$

10) $f(a)=a^4-2a^3-15a^2-3a+8$ at $a=5$

$f(5)=5^4-2(5)^3-15(5)^2-3(5)+8$

$f(5)=-7$

1

11) $f(a) = -6a^3 + 32a^2 - 12a - 2$ at $a = 5$

$f(5) = -6(5)^3 + 32(5)^2 - 12(5) - 2$

$f(5) = -12$

12) $f(a) = a^4 + a^3 - 3a^2 + 3a + 13$ at $a = -2$

$f(-2) = (-2)^4 + (-2)^3 - 3(-2)^2 + 3(-2) + 13$

$f(-2) = 3$

Evaluate each function at the given value using synthetic substitution.

13) $f(m) = m^3 - 10m^2 + 25m + 2$ at $m = 6$

6 | 1 -10 25 2

6 -24 6

1 -4 1 8

$f(6) = 8$

14) $f(x) = x^3 + 12x^2 + 34x - 21$ at $x = -6$

-6 | 1 12 34 -21

-6 -36 12

1 6 -2 -9

$f(-6) = -9$

15) $f(n) = -3n^3 - 4n^2 + 2n + 10$ at $n = -1$

-1 | -3 -4 2 10

3 1 -3

-3 -1 3 7

$f(-1) = 7$

16) $f(n) = n^4 + 9n^3 + 20n^2 - 6n - 28$ at $n = -5$

-5 | 1 9 20 -6 -28

-5 -20 0 30

1 4 0 -6 2

$f(-5) = 2$

17) $f(a) = -a^6 - a^5 + 34a^4 - 20a^3 + 6a - 40$ at $a = 5$

5 | -1 -1 34 -20 0 6 -40

-5 -30 20 0 0 30

-1 -6 4 0 0 6 -10

$f(5) = -10$

18) $f(m) = m^5 - 12m^3 + 16m^2 + 5m + 6$ at $m = -4$

-4 | 1 0 -12 16 5 6

-4 16 -16 0 -20

1 -4 4 0 5 -14

$f(-4) = -14$

Algebra Skillz

GRAPH

Below, the graph of $f(x) = |x + 3| - 2$ is sketched in bold. Its parent function $f(x) = |x|$ is represented by the thin curve.

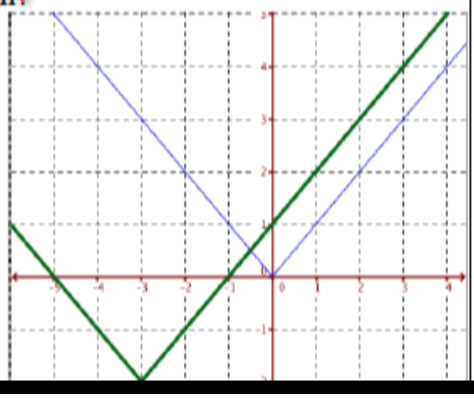
+3

1. Describe the translation of the parent graph.

Left 3, Down 2

-2

2. How does the translation relate to the equation?



SIMPLIFY

3. $\sqrt{18} + \sqrt{45} + \sqrt{54}$

$\sqrt{9}\sqrt{2} + \sqrt{9}\sqrt{5} + \sqrt{9}\sqrt{6}$

$3\sqrt{2} + 3\sqrt{5} + 3\sqrt{6}$

4. $-2(12 + 2\sqrt{20})$

$-24 - 4\sqrt{20}$

$= -24 - 4\sqrt{4}\sqrt{5}$

$= -24 - 4 \cdot 2\sqrt{5}$

$= -24 - 8\sqrt{5}$

SOLVE

5. Solve:

$(2x - 1)(3x + 2) = 0$

$x = \frac{1}{2}$ OR $x = \frac{-2}{3}$

6. Factor and solve.

$x^2 - 36x + 35 = 0$

$(x - 35)(x - 1) = 0$

$x = 35$ OR $x = 1$