

1. Degree: 4

Leading Coefficient: 6

3. Not a polynomial because the variable is on the bottom of the fraction.

5. 24 and -216

7. $192a^2 - 4$ 9. $2x^2 + 3x - 1$ 10. End Behavior: $\lim_{x \rightarrow -\infty} f(x) = +\infty$

$$\lim_{x \rightarrow +\infty} f(x) = +\infty$$

Odd or Even Degree: even

Number of Real Zeros: 2

12. End Behavior: $\lim_{x \rightarrow -\infty} f(x) = -\infty$

$$\lim_{x \rightarrow +\infty} f(x) = +\infty$$

Odd or Even Degree: odd

Number of Real Zeros: 5

2. Degree: 3

Leading Coefficient: $\frac{1}{5}$ 4. No, this polynomial contains two variables, x and y .

6. 0 and -135

8. $2a^4 - 5a^2 + 1$ 11. End Behavior: $\lim_{x \rightarrow -\infty} f(x) = +\infty$

$$\lim_{x \rightarrow +\infty} f(x) = +\infty$$

Odd or Even Degree: even

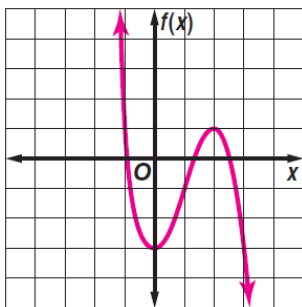
Number of Real Zeros: 1

5.2

Answer Key

1. $f(x) = -x^3 + 3x^2 - 3$

x	f(x)
-2	17
-1	1
0	-3
1	-1
2	1
3	-3
4	-19

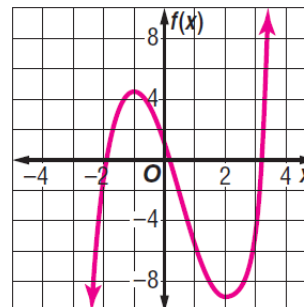


Zeros: -0.879, 1.347, 2.532

Relative maxima/minima: min at x=0
max at x=2

2. $f(x) = x^3 - 1.5x^2 - 6x + 1$

x	f(x)
-2	-1
-1	4.5
0	1
1	-5.5
2	-9
3	-3.5
4	17

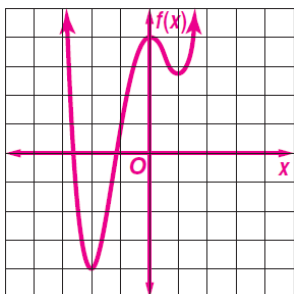


Zeros: -1.912, .161, 3.251

Relative maxima/minima: min at x=2
max at x=-1

3. $f(x) = .75x^4 + x^3 - 3x^2 + 4$

x	f(x)
-3	10.75
-2	-4
-1	0.75
0	4
1	2.75
2	12

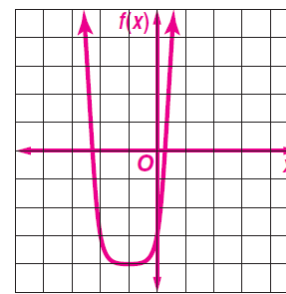


Zeros: -2.574 and -1.122

Relative maxima/minima: min at x=-2 and x=1
max at x=0

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

x	f(x)
-3	12
-2	-3
-1	-4
0	-3
1	12
2	77



Zeros: -2.414 and .414

Relative maxima/minima: min at x=-1

5.3

Answer Key

1. $10(x^2)^2 + 3(x^2) - 11$

2. Not Possible

3. $28(x^3)^2 + 25(x^3)$

4. $8x(4(x^2)^2 - 7(x^2) + 1)$

5. $\left(x^{\frac{1}{3}}\right)^2 + 7\left(x^{\frac{1}{3}}\right) - 10$

6. $\left(x^{\frac{1}{10}}\right)^2 + 29\left(x^{\frac{1}{10}}\right) + 2$

7. -2, 0, 9

8. -5, 5, -5i, 5i

9. 0, -7, 7

10. $0, \frac{3}{2}, -\frac{3}{2}$

11. -2, 2, $-i\sqrt{6}$, $i\sqrt{6}$

12. 16, 81

13. 8, 125

14. 1, 9

15. 25

5.4**Answer Key**

1. $x+1, x+4$

2. $x+3, x+5$

3. $x+3, x+4$

4. $x-3, x-2$

5. $3x+1, 3x-1$

6. $2x+1, x+1$

5.5**Answer Key**

1. $-7, \frac{3}{2}, 4$

2. $1, 1-i\sqrt{6}, 1+i\sqrt{6}$

3. $3, 2+i, 2-i$

4. $-i, i, -7i, 7i$

5. $f(x) = x^3 + 5x^2 + 9x + 45$

6. $f(x) = x^3 - 7x^2 + 16x - 112$

5.5 extra practice**Answer Key**

1. 1

2. -2, 2, 3

3. 1

4. $-\frac{2}{3}$

5. -2 and 7

5.6**Answer Key**

1. Sum: $3x-2$

Difference: $x+4$

Product: $2x^2 - 5x - 3$

Quotient: $\frac{2x+1}{x-3}, x \neq 3$

2. Sum: $2x^2 + 7x + 3$

Difference: $7x + 21$

Product: $x^4 + 7x^3 + 3x^2 - 63x - 108$

Quotient: $\frac{x+4}{x-3}, x \neq \pm 3$

3. $3x-12$

$3x-4$

4. $3x^2 - 1$

$3x^2 - 12x + 13$

5. 25

6. 10

7. 20

8. -11

9. 404