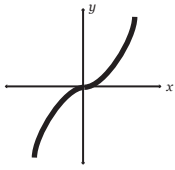
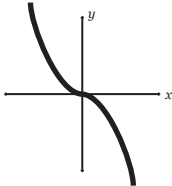
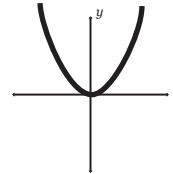
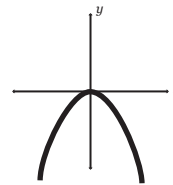




Odd Degree

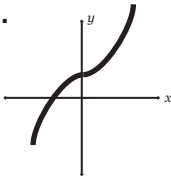
Polynomial
End Behavior

Even Degree

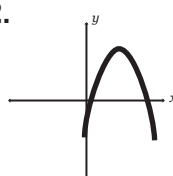
 $a > 0$ $x \rightarrow -\infty$
 $y \rightarrow -\infty$  $x \rightarrow +\infty$
 $y \rightarrow +\infty$ $a < 0$ $x \rightarrow -\infty$
 $y \rightarrow +\infty$  $x \rightarrow +\infty$
 $y \rightarrow -\infty$ $a > 0$ $x \rightarrow -\infty$
 $y \rightarrow +\infty$  $x \rightarrow +\infty$
 $y \rightarrow +\infty$ $a < 0$ $x \rightarrow -\infty$
 $y \rightarrow -\infty$  $x \rightarrow +\infty$
 $y \rightarrow -\infty$

Identify whether the function graphed has an odd or even degree and a positive or negative leading coefficient ($a > 0$ or $a < 0$).

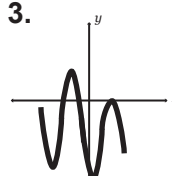
1.



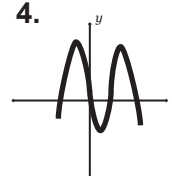
2.



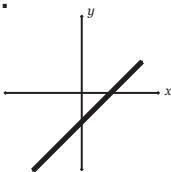
3.



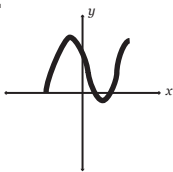
4.



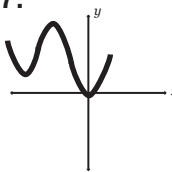
5.



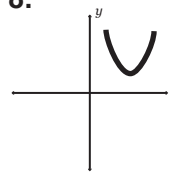
6.



7.



8.



IRRATIONAL ROOT THEOREM

If $a + b\sqrt{c}$ is a root of $F(x)$, then $a - b\sqrt{c}$ is also a root of $F(x)$.

Complex Conjugate Root Theorem

If $a + bi$ is a root of $F(x)$, then $a - bi$ is also a root of $F(x)$.

Find a polynomial equation having the given roots.

1. $3, -1, 2$

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

3. $3i, 4$

4. $-5, 2 + i$

5. $2, -2, i\sqrt{3}$

6. $1, 1 + i\sqrt{5}, 1 - \sqrt{5}$

One root is given. Find the other root(s).

7. $x^3 - 3x^2 + 9x + 13 = 0; 2 + 3i$

8. $x^3 - 3x^2 + 5x - 15 = 0; i\sqrt{5}$

9. $x^3 - 2x^2 - 14x + 40 = 0; 3 + i$

10. $x^4 + 4x^3 + 11x^2 + 24x + 30 = 0; -2 + i$