

4 Practice Test WITH CalcChat®



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Determine whether the function is a polynomial function. If so, write it in standard form and state its degree, type, and leading coefficient.

- $f(x) = x^2 - 2x + 9$
- $g(x) = -\frac{1}{2}x + 3x^4 - 2x^3$
- Graph $y = -x^4 + x^3 - 6x^2 - 2$. Identify the x -intercepts and the points where the local maximums and local minimums occur. Determine the intervals for which the function is increasing or decreasing.

Write a polynomial function f of least degree that has rational coefficients, a leading coefficient of 1, and the given zeros.

- $3, 1 - \sqrt{2}$
- $-2, 4, 3i$

Find the product or quotient.

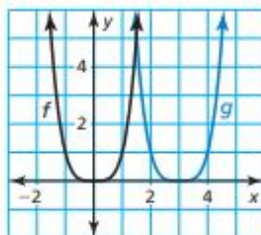
- $(x^6 - 4)(x^2 - 7x + 5)$
- $(2x^3 - 3x^2 + 5x - 1) \div (x + 2)$
- $(2x + 3)^3$
- $(3x^4 - 2x^3 - x - 1) \div (x^2 - 2x + 1)$

Factor the polynomial completely.

- $27x^3 + 64$
- $16x^4 - 1$
- $8x^2 - 125x^5$
- $2x^9 - 4x^5 - 16x$

14. The graphs of $f(x) = x^4$ and $g(x) = (x - 3)^4$ are shown.

- How many zeros does each function have? Explain.
- Describe the transformation of f represented by g .
- Determine the intervals for which the function g is increasing or decreasing.



15. Solve the system. Explain your method.

$$y = -3x^2 + 5x - 9$$

$$y = x^3 - 4x^2 - 11x + 7$$

16. The number P (in thousands) of passenger cars, and the number C (in thousands) of commercial vehicles, produced each year in the United States in a 9-year period can be modeled by the equations shown, where t is time (in years). Write a model for the total number T of passenger cars and commercial vehicles produced each year. Then find the total number of passenger cars and commercial vehicles produced in the third year.

$$P = 11t^4 - 208t^3 + 1288t^2 - 2438t + 3695$$

$$C = 9t^4 - 166t^3 + 989t^2 - 1480t + 4754$$



17. Your friend starts a golf caddy business. The table shows the profit p (in dollars) of the business each month t for the first five months. Use finite differences to determine the degree of the polynomial function that fits the data. Then use technology to find the polynomial function. Use the model to predict the profit in the seventh month.

t	1	2	3	4	5	6
p	65	86	129	200	305	450