College Algebra Worksheet (7)

Multiple Choice Questions on Polynomials

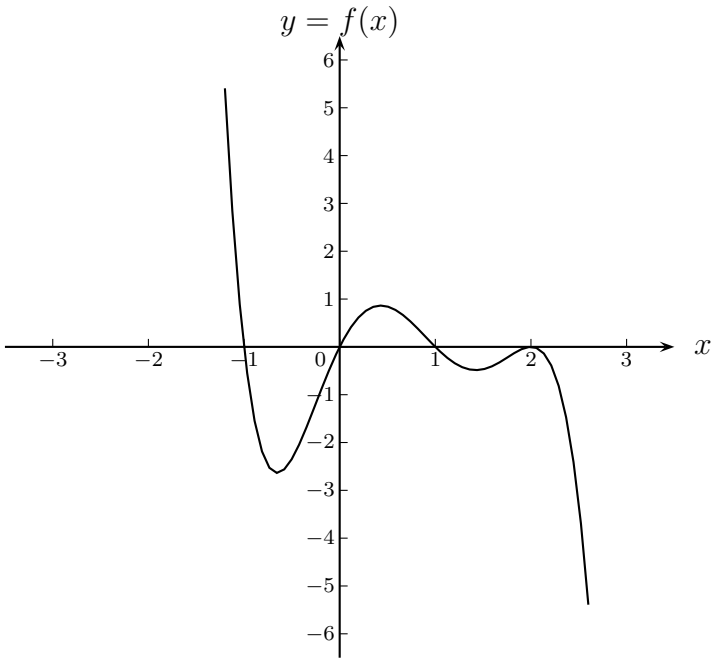
1. Find the function f whose graph is given below.

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

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

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

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



2. A polynomial f with real coefficients and degree 2 has an imaginary zero at $2i$. The graph of f has a y-intercept at $(0, 8)$. Find f.

   a. $f(x) = 2x^2 + 8$

   b. $f(x) = 2x^2 - 8$

   c. $f(x) = x^2 + 8$

   d. $f(x) = x^2 + 4$

3. Let $p(x) = x^4 + 5x^3 + 7x^2 - 4$. Find the multiplicity of the zero at $x = 2$.

   a. 1

   b. 2

   c. 3

   d. 4

4. Let $p(x) = 4x^7 + 2x^4 - 10x^3 - 5$. According to the rational zero theorem, which number is **not** a possible rational zero for p?

   a. -1

   b. $\frac{5}{4}$

   c. $\frac{4}{5}$

   d. 5

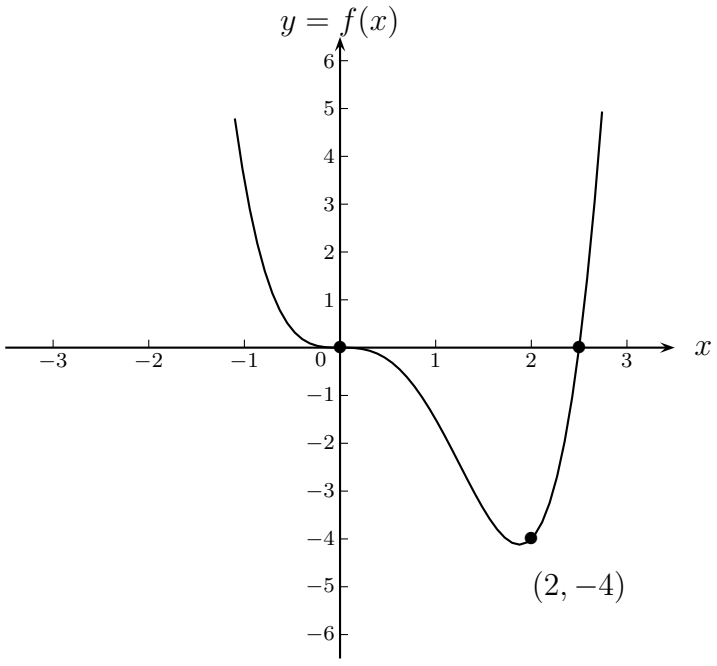
5. Find the equation of the degree 4 polynomial f graphed to the right.

   a. $f(x) = \frac{1}{2}x^3(2x - 5)$

   b. $f(x) = \frac{1}{2}x^3(2x + 5)$

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

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



6. Find the remainder when $f(x) = x^6 + 5x^5 - x^3 + x - 6$ is divided by $x + 1$.

   a. 0

   b. -10

   c. -4

   d. -12

7. Given that a function $f(x)$ has a zero at $x = 3$ with multiplicity 2, then we know that

   a. the graph of $f(x)$ crosses the y-axis at 3.

   b. $f(x) \longrightarrow \infty$ as $x \longrightarrow \infty$.

   c. the graph of $f(x)$ crosses the x-axis at 3.

   d. The graph of $f(x)$ touches but does not cross the x-axis at 3.

8. The polynomial $p(x) = x^4 + 5x^3 - 2x^2 - 24x$ has a zero at $x = 2$. Factor p completely.

   a. $p(x) = x(x + 2)(x + 3)(x + 4)$

   b. $p(x) = (x - 2)(x - 3)(x - 4)$

   c. $p(x) = x(x + 2)(x - 3)(x - 4)$

   d. $p(x) = x(x - 2)(x + 3)(x + 4)$

9. Which of these polynomials has a zero of multiplicity 3 at $x = 1$?

   a. $p(x) = x^4 + 5x^3 + 5x^2 - 5x - 6$

   b. $p(x) = x^4 - 2x^3 - 3x^2 + 8x - 4$

   c. $p(x) = x^4 + x^3 - 9x^2 + 11x - 4$

   d. $p(x) = x^4 - 4x^3 + 6x^2 - 4x + 1$

10. The remainder of the division $\dfrac{x^5+1}{x^2-1}$ is equal to

a. 1

b. $x+1$

c. 2

d. $x+2$