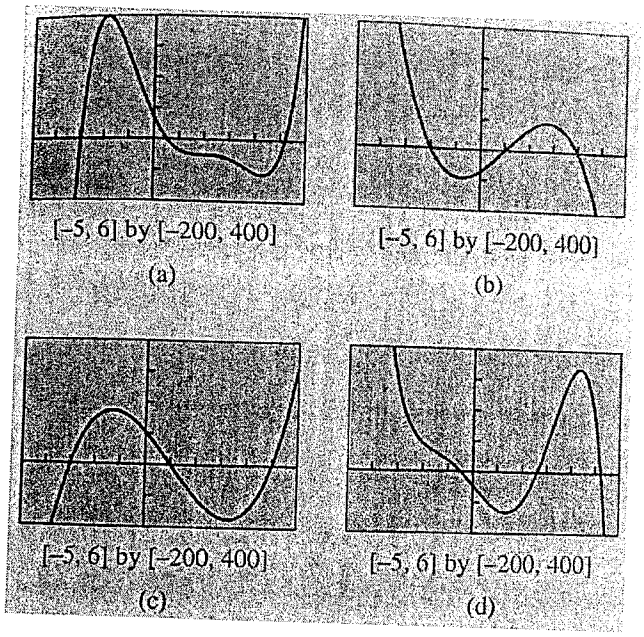
Precalculus Unit 2 Homework—Polynomial Functions

In exercises 1-4, match the polynomial function with its graph.



1. $f(x) = 7x^3 - 21x^2 - 91x + 104$

c

2. $f(x) = -9x^3 + 27x^2 + 54x - 73$

b

3. $f(x) = x^5 - 8x^4 + 9x^3 + 58x^2 - 164x + 69$

a

4. $f(x) = -x^5 + 3x^4 + 16x^3 - 2x^2 - 95x - 44$

d

Using limits, describe the end behavior of each function:

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

LEB: $\lim_{x \to -\infty} f(x) = -\infty$

REB: $\lim_{x \to \infty} f(x) = \infty$

6. $f(x) = -x^3 + 4x^2 + 31x - 70$

$\lim_{x \to -\infty} f(x) = \infty$

$\lim_{x \to \infty} f(x) = -\infty$

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

$\lim_{x \to -\infty} f(x) = \infty$

$\lim_{x \to \infty} f(x) = \infty$

8. $f(x) = (2x+1)(x-4)^3$

$\lim_{x \to -\infty} f(x) = \infty$

$\lim_{x \to \infty} f(x) \infty$

Find the zeros algebraically:

9. $f(x) = x^2 + 2x - 8$

$x = -4, 2$

10. $f(x) = 9x^2 - 3x - 2$

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

11. $f(x) = 3x^3 - x^2 - 2x$

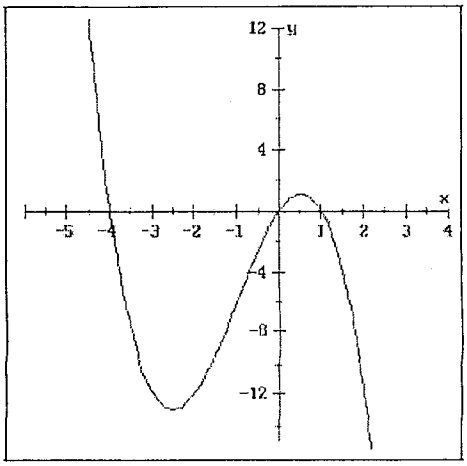
$x = -\frac{2}{3}, 0, 1$

12. $f(x) = x^3 - 25x$

$x = -5, 0, 5$

Give a possible factorization of the following polynomials. Do not multiply out factors!

13.



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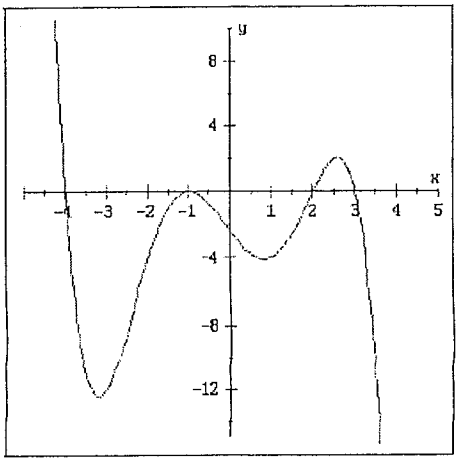

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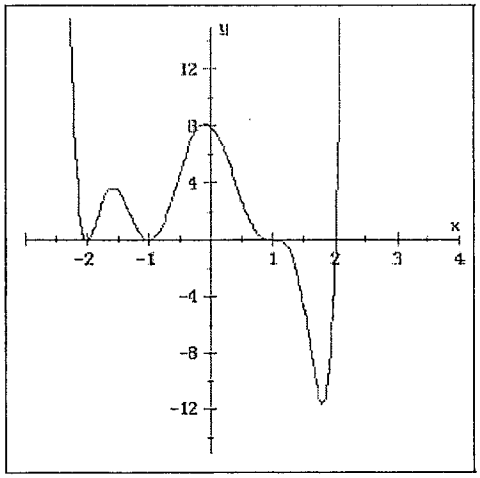

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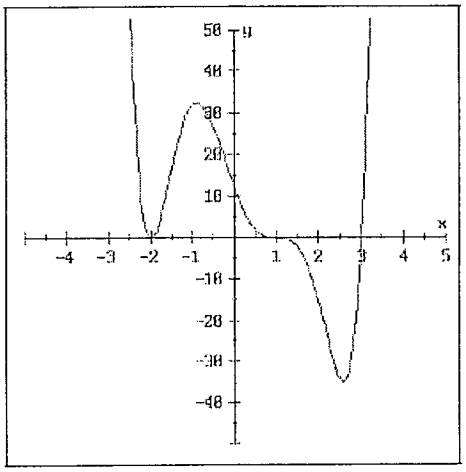
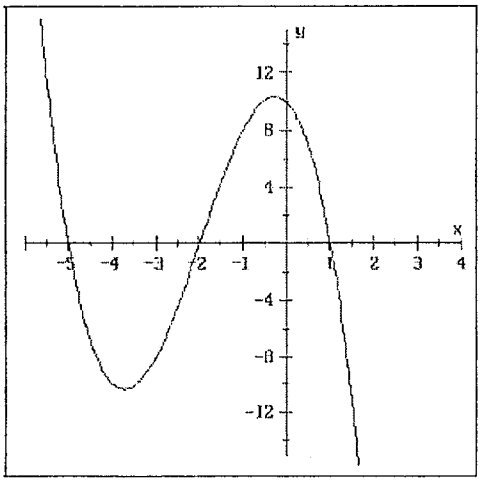
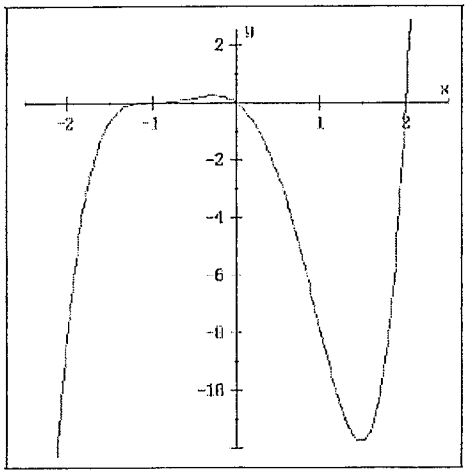


17.



18.



13. $f(x) = -x(x+4)(x-1)$

14. $f(x) = -(x+4)(x+1)^2(x-2)(x-3)$

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

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

17. $f(x) = -(x+5)(x+2)(x-1)$

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