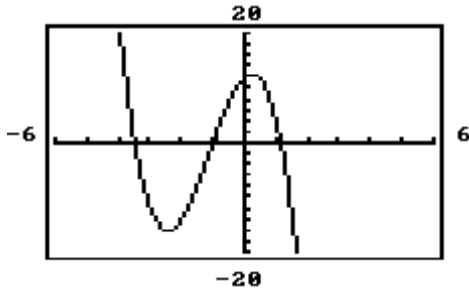Name_____ 2.3/2.4 REVIEW

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Match the given graph with its polynomial function.

1)

A) $f(x) = -3x^5 + 2x^4 - x^2 + 2x - 12$

B) $f(x) = -3x^3 - 10x^2 + 5x + 12$

C) $f(x) = x^4 - 2x^2 - 3x + 12$

D) $f(x) = 2x^3 - 12x^2 - 5x - 12$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Describe the end behavior of the polynomial function by finding $\lim\limits_{x \to \infty} f(x)$ and $\lim\limits_{x \to -\infty} f(x)$.

2) $f(x) = -2x^2 + 2x^3 + 6x - 5$

3) $f(x) = -3x^4 - 5x^2 - 7$

Find the zeros of the function.

4) $f(x) = x^3 - 16x$

5) $f(x) = 3x^3 + 4x^2 + 1x$

6) $f(x) = x^2 + 9x + 20$

Describe the end behavior of the polynomial function by finding $\lim\limits_{x \to \infty} f(x)$ and $\lim\limits_{x \to -\infty} f(x)$.
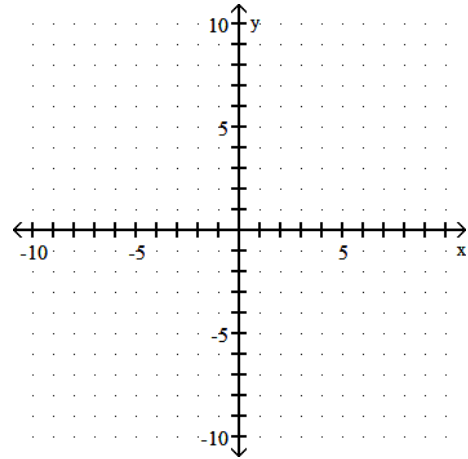
7) $f(x) = x^3 + 2x^2 + 5x - 7$

Find the zeros of the polynomial function and state the multiplicity of each.
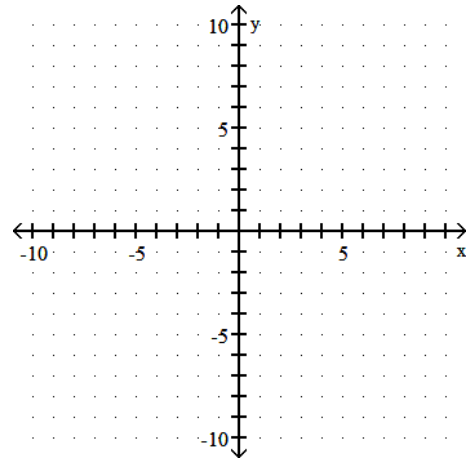
8) $f(x) = -5x^2(x - 8)(x + 3)^3$

9) $f(x) = 5(x + 7)^2(x - 7)^3$

Graph the function.

10) $P(x) = 3x(x + 2)(x - 1)$

11) $P(x) = -2x(x + 1)^2$

Find a cubic function with the given zeros.

12) $6, -4, 7$

Divide f(x) by d(x), and write a summary statement in the form indicated.

13) $f(x) = 4x^3 - 14x^2 - 6x + 5; d(x) = 2x + 1$ (Write answer in polynomial form)

14) $f(x) = x^4 - 4x^3 - 2x^2 - 4x - 3; d(x) = x^2 + 1$ (Write answer in fractional form)

Divide using synthetic division, and write a summary statement in fraction form.

15) $\dfrac{2x^3 + 3x^2 + 4x - 10}{x + 1}$

1

Find the remainder when f(x) is divided by (x - k)

16) $f(x) = 2x^3 + 2x^2 + 3x + 4$; k= -2

17) $f(x) = x^5 + 4x^4 - 5x^3 + 2x^2 - 4x - 7$; k = 3

Use the Factor Theorem to determine whether the first polynomial is a factor of the second polynomial.
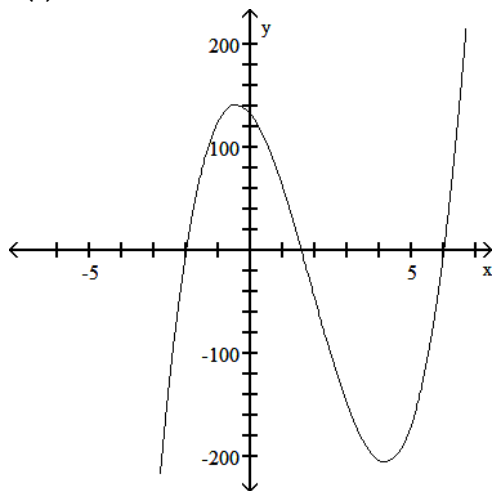
18) $x - 2$; $5x^2 - 24x + 28$

19) $x + 2$; $6x^3 + 9x^2 - 5x + 2$

20) $x + 4$; $8x^4 + 33x^3 - 4x^2 + x + 4$

Use the graph to guess possible linear factors of f(x). Then completely factor f(x) with the aid of synthetic division.

21) $f(x) = 7x^3 - 39x^2 - 40x + 132$

Find the requested function.

22) Find the polynomial function with leading coefficient -7; degree 3; and -4, 4, and 2 as zeros.

Use the Rational Zeros Theorem to write a list of all potential rational zeros

23) $f(x) = 3x^3 + 37x^2 + 37x + 27$

24) $f(x) = 2x^3 + 5x^2 + 12x - 8$

Find all rational zeros.

25) $f(x) = x^3 + 4x^2 - 27x - 90$

26) $f(x) = 10x^3 + 53x^2 + 14x - 5$