

MATH 1314  
COLLEGE ALGEBRA  
CHAPTER 3 TEST REVIEW

FALL 2003

Name \_\_\_\_\_

SELECT THE CORRECT RESPONSE.

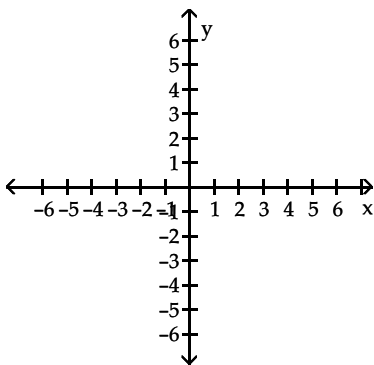
**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Solve the problem.**

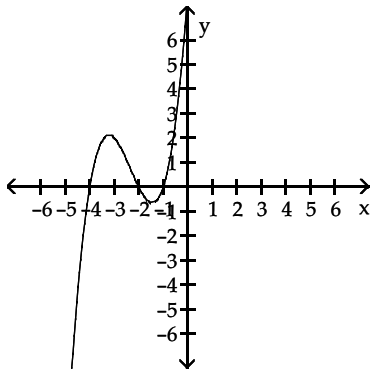
- 1) A herd of moose is introduced to a wildlife refuge. The number of moose,  $N(t)$ , after  $t$  years is described by the polynomial function  $N(t) = -t^3 + 18t + 120$ . Use the Leading Coefficient Test to determine the graph's end behavior. What does this mean about what will eventually happen to the moose population?
  - A) The moose population in the refuge will reach a constant amount greater than 0.
  - B) The moose population in the refuge will grow out of control.
  - C) The moose population in the refuge will die out.
  - D) The moose population in the refuge will be displaced by "oil" wells.

**Graph the polynomial function.**

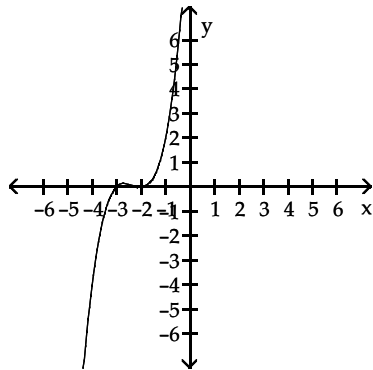
2)  $f(x) = (x + 1)(x + 2)(x + 3)$



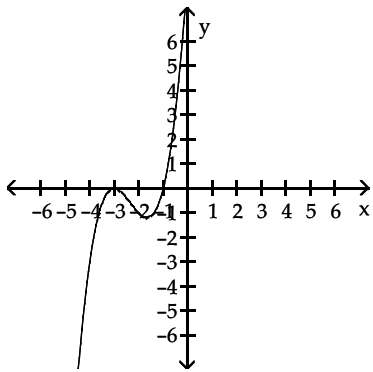
A)



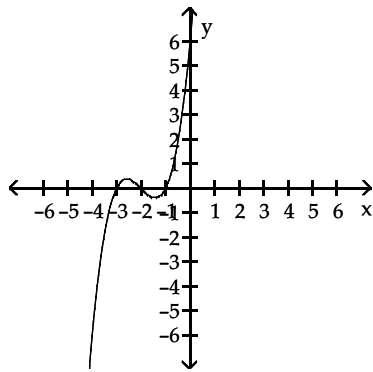
B)



C)



D)



**Solve the problem.**

3) Given  $f(x) = 2x^3 - 5x^2 - 4x + 8$ , use the Remainder Theorem to find  $f(-3)$ .

A)  $f(-3) = -29$

B)  $f(-3) = 21$

C)  $f(-3) = -79$

D)  $f(-3) = 20$

4) Use synthetic division to divide  $f(x) = x^3 - 12x^2 + 27x + 40$  by  $x - 8$ . Use the result to find all zeros of  $f$ .

A)  $\{-8, -5, 1\}$

B)  $\{8, 5, -1\}$

C)  $\{-8, 5, -1\}$

D)  $\{8, -5, 1\}$

Use the Rational Zero Theorem to list all possible rational zeros for the given function.

5)  $x^5 - 4x^2 + 5x + 15$

A)  $\pm 1, \pm \frac{1}{5}, \pm \frac{1}{3}, \pm \frac{1}{15}$

B)  $\pm 1, \pm 5, \pm 3$

C)  $\pm 1, \pm \frac{1}{5}, \pm \frac{1}{3}, \pm \frac{1}{15}, \pm 5, \pm 3, \pm 15$

D)  $\pm 1, \pm 5, \pm 3, \pm 15$

Use Descartes's Rule of Signs to determine the possible number of positive and negative real zeros for the given function.

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

A) 3 or 1 positive zeros, 3 or 1 negative zeros

B) 2 or 0 positive zeros, 1 or 0 negative zeros

C) 2 or 0 positive zeros, 1 negative zero

D) 2 or 0 positive zeros, 2 or 0 negative zeros

Use the Upper and Lower Bound Theorem to determine integer-valued bounds to the real zeros of the polynomial function.

7)  $f(x) = 4x^4 + 7x^2 - 2$

A) -4 and 4

B) -1 and 1

C) 0 and 2

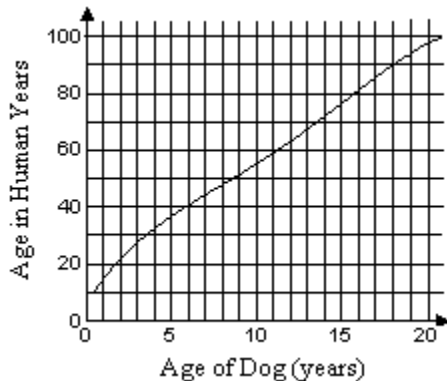
D) -2 and 2

Solve the problem.

8) The polynomial function

$$H(x) = -0.001183x^4 + 0.05495x^3 - 0.8523x^2 + 9.054x + 6.748$$

models the age in human years,  $H(x)$ , of a dog that is  $x$  years old, where  $x \geq 1$ . Using the graph of this function shown below, what is the approximately equivalent dog age for a person who is 35?



A) 3 years

B) 6 years

C) 4 years

D) 5 years

Find the horizontal asymptote, if any, of the graph of the rational function.

9)  $h(x) = \frac{-5x - 2}{3x - 3}$

A)  $y = \frac{2}{3}$

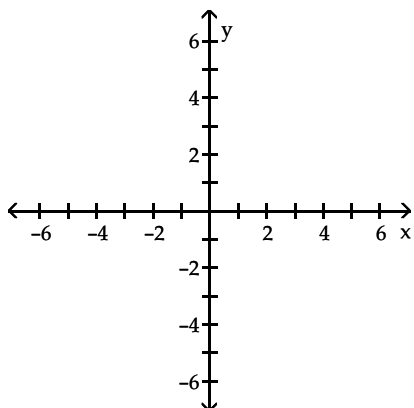
B)  $y = -5$

C)  $y = -\frac{5}{3}$

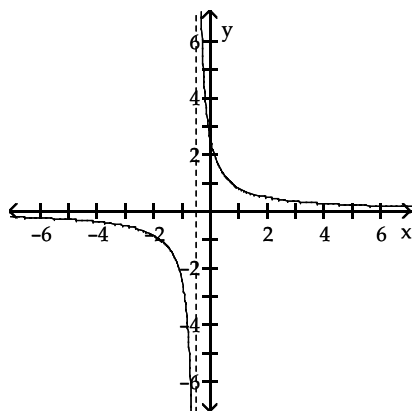
D) no horizontal asymptote

Graph the rational function.

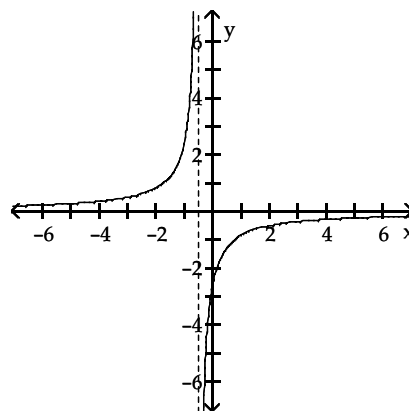
$$10) f(x) = \frac{5}{2+4x}$$



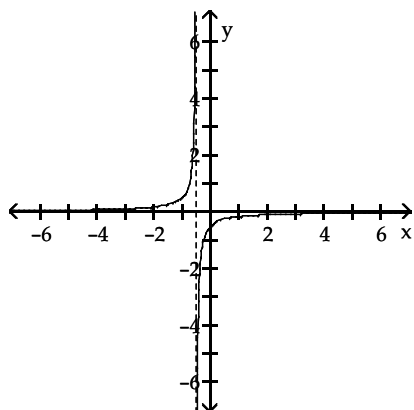
A)



B)



C)



D)

