

Houston Community College
College Algebra - M1314
Review for Exam Three

Name _____

Find the y-intercepts and any x-intercepts.

1) $y = 2x^2 - 8x$

A) y-intercept (0, 0), x-intercept (4, 0)

C) y-intercept (0, 0), x-intercepts (0, 0) and (4, 0)

B) y-intercept (0, 0), x-intercepts (0, 0) and (0, 4)

D) y-intercept (0, 0), x-intercepts (0, 0) and (-4, 0)

Identify the vertex of the parabola.

2) $y = 2x^2 - 8x + 5$

A) (-3, 2)

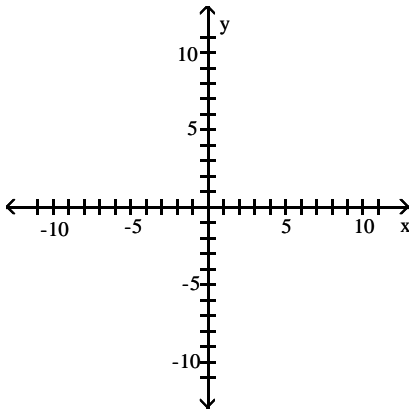
B) (2, -3)

C) (-2, 3)

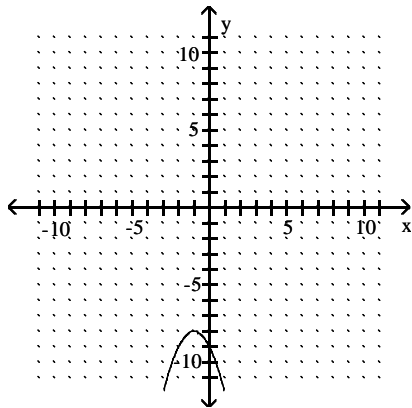
D) (3, -2)

Graph.

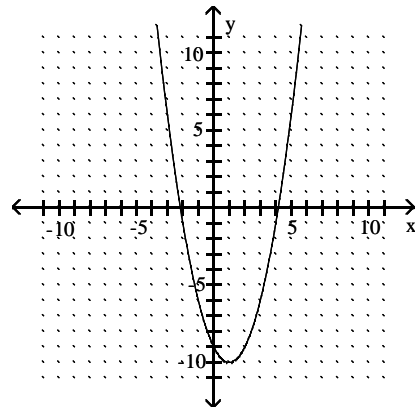
3) $y = x^2 - 2x - 9$



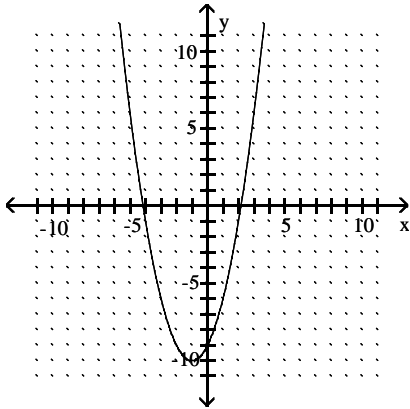
A)



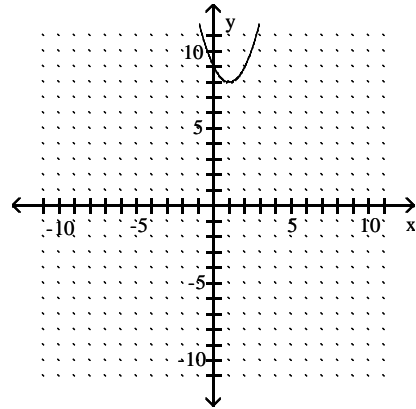
B)



C)



D)



Use synthetic division to perform the division.

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

A) $3x^3 + 4x^2 - 2x - 4 + \frac{7}{x - 2}$

C) $3x^3 + 4x^2 - x - 3 + \frac{1}{x - 2}$

B) $3x^3 + 4x^2 - 2x - 4 + \frac{-11}{x - 2}$

D) $3x^3 + 4x^2 - 2x + 4 + \frac{-8}{x - 2}$

Use the remainder theorem and synthetic division to find $f(k)$.

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

A) 49

B) 3

C) 46

D) -49

Use synthetic division to decide whether the given number is a zero of the given polynomial.

6) $7i$; $f(x) = x^3 + 5x^2 + 49x + 245$

A) Yes

B) No

Factor $f(x)$ into linear factors given that k is a zero of $f(x)$.

7) $f(x) = x^3 - 12x - 16$; $k = -2$ (multiplicity 2)

A) $f(x) = (x + 4)(x + 2)(x - 2)$

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

C) $f(x) = (x - 2)^2(x - 4)$

D) $f(x) = (x + 2)^2(x + 4)$

For the polynomial, one zero is given. Find all others.

8) $P(x) = x^3 + 2x^2 - 6x + 8$; $1 + i$

A) $1 - i, 4$

B) $1 - i, -4$

C) $1 - i, 4i$

D) $-4, 4$

Give all possible rational zeros for the following polynomial.

9) $P(x) = -2x^4 + 2x^3 + 5x^2 + 18$

A) $\pm 1, \pm 2, \pm 1/2, \pm 1/3, \pm 1/6, \pm 1/9, \pm 1/18$

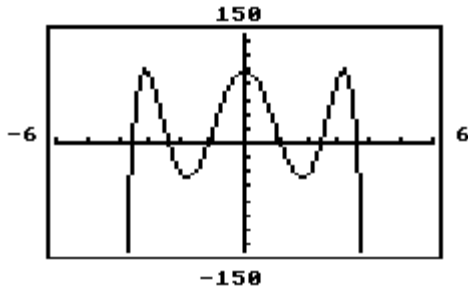
B) $\pm 1, \pm 1/2, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18$

C) $\pm 1, \pm 1/2, \pm 2, \pm 3, \pm 3/2, \pm 6, \pm 9, \pm 9/2, \pm 18$

D) $\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18$

Find the equation that the given graph represents.

10)



A) $P(x) = -x^6 + 10x^4 - 100x^2 - 100$

B) $P(x) = -x^6 + 20x^4 - 100x^2 + 100$

C) $P(x) = -x^5 - 20x^4 - 100x^2 + 100x$

D) $P(x) = x^5 - 10x^4 - 100x^2 + 100$

Find the correct end behavior diagram for the given polynomial function.

11) $P(x) = -x^5 - 5x^3 - 3x + 4$

A) ↘ ↗

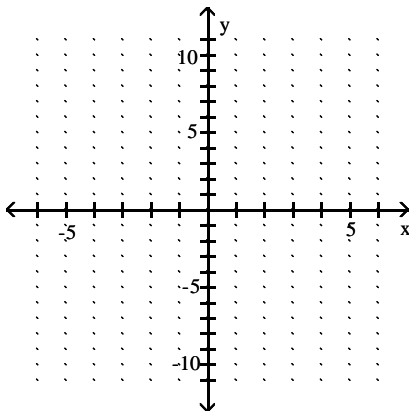
B) ↖ ↗

C) ↖ ↘

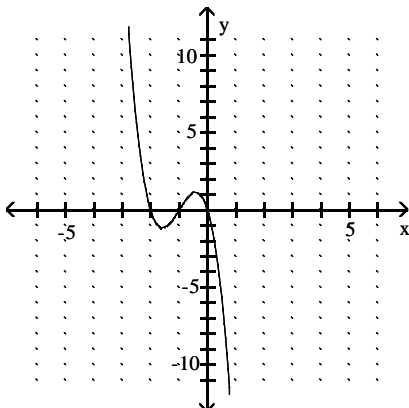
D) ↗ ↗

Graph the polynomial function. Factor first if the expression is not in factored form.

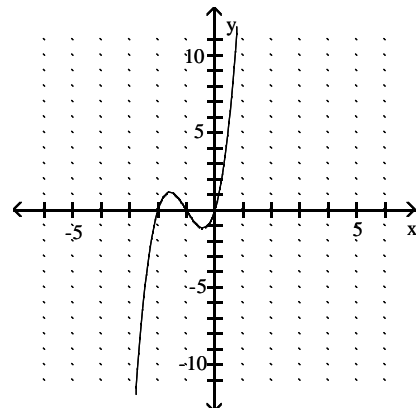
12) $f(x) = -3x(x + 2)(x + 1)$



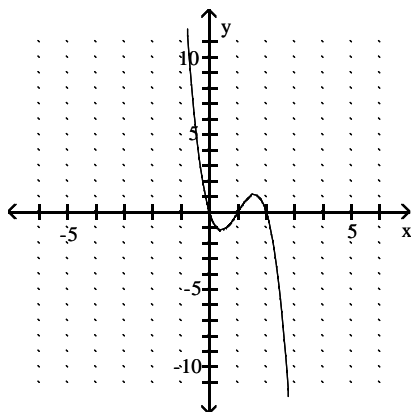
A)



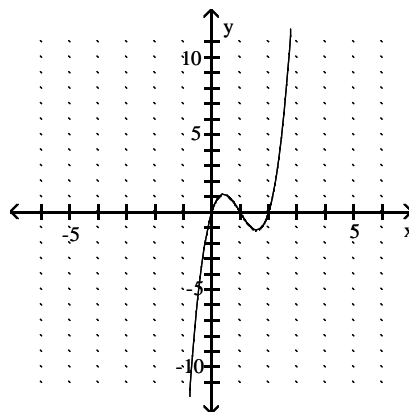
B)



C)



D)



Find any vertical asymptotes.

13) $h(x) = \frac{(x-8)(x+7)}{x^2-9}$

A) None

B) $x = 8, x = -7$ C) $x = 3, x = -3$ D) $x = -8, x = 7$

Find the horizontal asymptote of the given function.

14) $f(x) = \frac{6x^2 + 8}{6x^2 - 8}$

A) $y = 8$

B) None

C) $y = -8$ D) $y = 1$

15) $g(x) = \frac{x^2 + 8x - 9}{x - 9}$

A) None

B) $y = 0$ C) $y = -9$ D) $y = 8$

16) $g(x) = \frac{x+5}{x^2-3}$

A) None

B) $y = 0$ C) $y = 1$ D) $y = 3$

Solve the problem.

17) The weight W of an object on the Moon varies directly as the weight E on earth. A person who weighs 178 lb on earth weighs 35.6 lb on the Moon. How much would a 102-lb person weigh on the Moon?

A) .2 lb

B) 315.6 lb

C) 510 lb

D) 20.4 lb

18) The time it takes to complete a certain job varies inversely to the number of people working on that job. If it takes 32 hours for 7 carpenters to frame a house, then how long will it take 56 carpenters to do the same job?

A) 40 hours

B) 4.0 hours

C) 56 hours

D) 12.3 hours

19) The force needed to keep a car from skidding on a curve varies jointly as the weight of the car and the square of the car's speed, and inversely as the radius of the curve. If a force of 3600 pounds is needed to keep an 1800 pound car traveling at 20 mph from skidding on a curve of radius 600 feet, what force would be required to keep the same car from skidding on a curve of radius 580 feet at 40 mph? Round your answer to the nearest pound of force?

A) 14,929 pounds

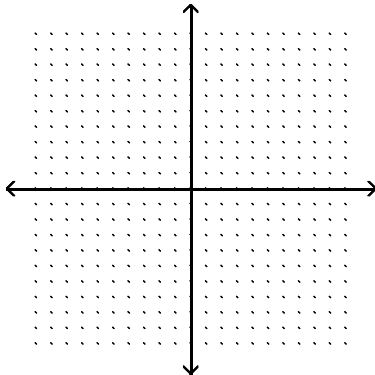
B) 15,467 pounds

C) 14,765 pounds

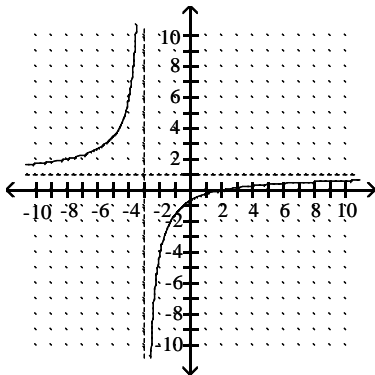
D) 14,897 pounds

Sketch the graph of the rational function.

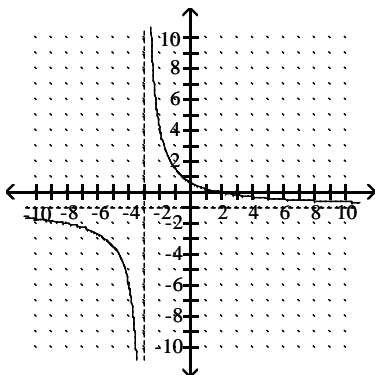
$$20) f(x) = \frac{x-2}{x+3}$$



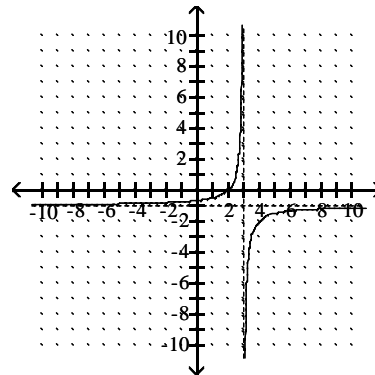
A)



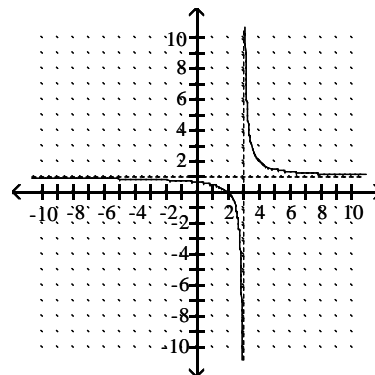
C)



B)



D)



Answer Key

Testname: M1314 REVIEW FOR EXAM 3

- 1) C
- 2) B
- 3) B
- 4) A
- 5) D
- 6) A
- 7) B
- 8) B
- 9) C
- 10) B
- 11) C
- 12) A
- 13) C
- 14) D
- 15) A
- 16) B
- 17) D
- 18) B
- 19) D
- 20) A