Math 1314 - Practice Final Exam - Fall 2019

MULTIPLE CHOICE SECTION. (5 pts each) Choose the correct answer for each question. Select one choice only. No work will be graded. No partial credit.

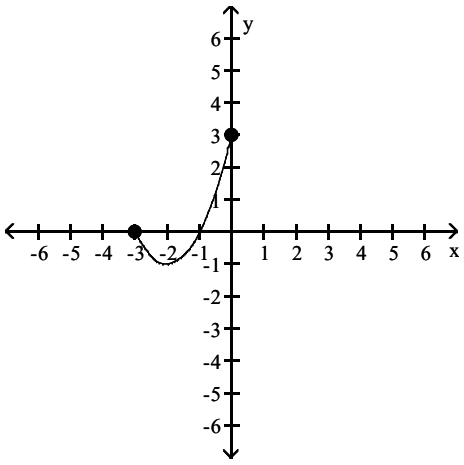
Evaluate as requested.

1) Given that $f(x) = x^2 - 3x - 3$, find $f(-3)$. 1) _____

A) 21 B) −3 C) 3 D) 15

Find the domain and range of the function represented in the graph.

2) 2) _____



A) Domain: [−1, 3]; Range: [−3, 0] B) Domain: [0, 3]; Range: (−∞, 3]

C) Domain: (−∞, 3]; Range: [0, 3] D) Domain: [−3, 0]; Range: [−1, 3]

Answer the question.

3) How can the graph of $f(x) = -\sqrt{x + 3}$ be obtained from the graph of $y = \sqrt{x}$? 3) _____

A) Shift it horizontally −3 units to the left. Reflect it across the x−axis.

B) Shift it horizontally 3 units to the right. Reflect it across the x−axis.

C) Shift it horizontally 3 units to the left. Reflect it across the x−axis.

D) Shift it horizontally 3 units to the left. Reflect it across the y−axis.

Find the domain of the function.

4) $h(x) = \dfrac{x - 1}{x^3 - 16x}$ 4) _____

A) (−∞, 1) ∪ (1, ∞) B) (−∞, 0) ∪ (0, ∞)

C) (−∞, −4) ∪ (−4, 0) ∪ (0, 4) ∪ (4, ∞) D) (−∞, ∞)

Find the vertex of the parabola.

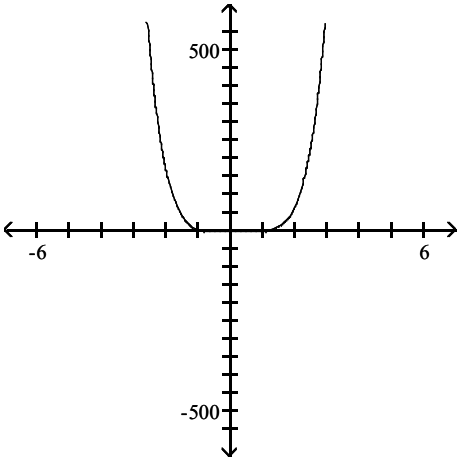
5) $f(x) = -2x^2 + 12x - 17$ 5) _____

A) (−3, −1) B) (−1, −3) C) (1, 3) D) (3, 1)

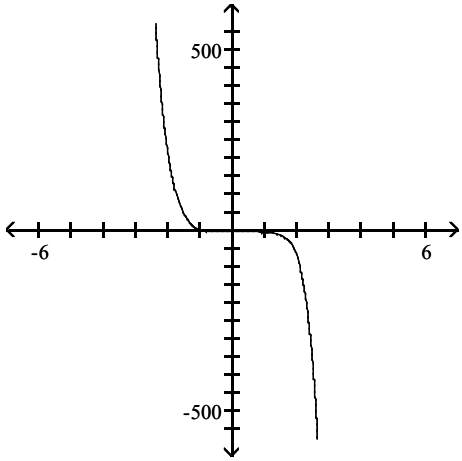
Use the leading–term test to match the function with the correct graph.

6) $f(x) = -0.7x^6 - x^5 + 6x^4 - 3x^3 - 5x^2 + x - 3$ 6) _____

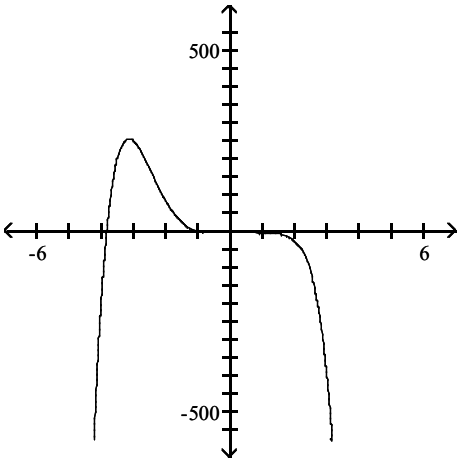
A)



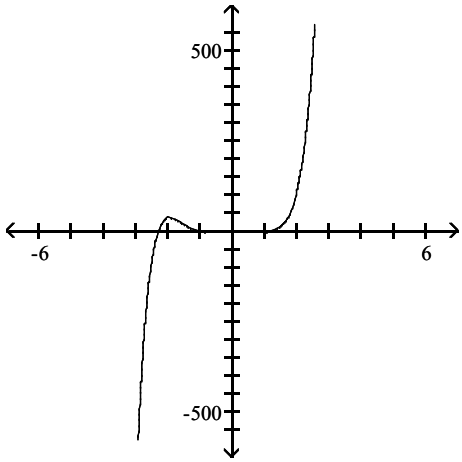
B)



C)



D)



Write the equation in its equivalent exponential form.

7) $\log_b 8 = 3$ 7) _____

A) $b^3 = 8$ B) $8^3 = b$ C) $8^b = 3$ D) $3^b = 8$

Write the equation in its equivalent logarithmic form.

8) $14^2 = y$ 8) _____

A) $\log_{14} y = 2$ B) $\log_y 2 = 14$

C) $\log_2 y = 14$ D) $\log_y 14 = 2$

Use properties of logarithms to condense the logarithmic expression.

9) $\ln x + 9\ln y$ 9) _____

A) $\ln \frac{x}{y^9}$ B) $\ln xy^9$ C) $\ln 9xy$ D) $\ln (x + 9y)$

Solve.

10) Given that $\log_a 11 = 2.398$, and $\log_a 5 = 1.609$, find $\log_a \frac{11}{5}$. 10) _____

A) 0.789 B) 4.007 C) –0.788 D) 1.49

Solve the exponential equation. Express the solution set in terms of natural logarithms.

11) $e^{3x} = 5$ 11) _____

A) $\left\{\frac{\ln 3}{5}\right\}$ B) $\left\{\frac{\ln 5}{3}\right\}$ C) {3 ln 5} D) $\left\{\frac{5}{3}e\right\}$

Solve the logarithmic equation.

12) $6 + 6 \ln x = 10$ 12) _____

A) $\left\{\frac{e^4}{6}\right\}$ B) $\left\{e^{2/3}\right\}$ C) $\left\{\frac{4}{6 \ln 1}\right\}$ D) $\left\{\ln \frac{2}{3}\right\}$

SHORT ANSWER SECTION. (5 pts each) WRITE THE ANSWER IN THE BOX. Write the FINAL ANSWER ONLY (do NOT write any work). No work will be graded. No partial credit.

Divide using synthetic division.

13) $\frac{x^4 - 3x^3 + x^2 + 5x - 6}{x - 1}$ 13) _____

FINAL ANSWER ONLY

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

14) $f(x) = \frac{5x^4 + 9x - 5}{x^2 - 5}$ 14) _____

FINAL ANSWER ONLY

Use properties of logarithms to expand the logarithmic expression

15) $\log_b (yz^9)$ 15) _____

FINAL ANSWER ONLY

Solve the exponential equation by expressing each side as a power of the same base and then equating exponents.

16) $3^{(3x - 6)} = 27$ 16) _____

FINAL ANSWER ONLY

ESSAY. (10 pts each) Show all work to justify your answer. Answer with no work or insufficient work will receive no credit. Partial credit may be given.

Solve the logarithmic equation. Be sure to check your solutions.

17) $\log_6 x + \log_6 (x - 35) = 2$

SHOW ALL WORK

Solve the exponential equation. Express the solution set in terms of natural logarithms.

18) $e^{x+6} = 4$

SHOW ALL WORK

1) D
2) D
3) C
4) C
5) D
6) C
7) A
8) A
9) B
10) A
11) B
12) B
13) $x^3 - 2x^2 - x + 4 - \frac{2}{x - 1}$
14) None
15) $\log_b y + 9 \log_b z$
16) {3}
17) {36}
18) {ln 4 – 6}