MATH 1730 Precalculus Final Exam Review Part 2

Name_____

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

Find the domain of the function.

1) $\frac{x}{\sqrt{x - 4}}$ 1) _____

A) $[4, \infty)$ B) $(-\infty, \infty)$ C) $(4, \infty)$ D) $(-\infty, 4) \cup (4, \infty)$

2) $f(x) = \frac{1}{x - 2} + \frac{4}{x + 6}$ 2) _____

A) $(-\infty, -6) \cup (-6, \infty)$ B) $(-\infty, \infty)$
C) $(-\infty, 2) \cup (2, \infty)$ D) $(-\infty, -6) \cup (-6, 2) \cup (2, \infty)$

Solve the problem.

3) A kennel owner has 1400 feet of fencing to enclose a rectangular dog exercise pen. Express the area of the exercise pen, A, as a function of one of its dimensions, x. 3) _____

A) $A(x) = x(1400 - x)$ B) $A(x) = x(700 - x)$
C) $A(x) = (700 - x)^2$ D) $A(x) = x(x - 700)$

Solve the equation.

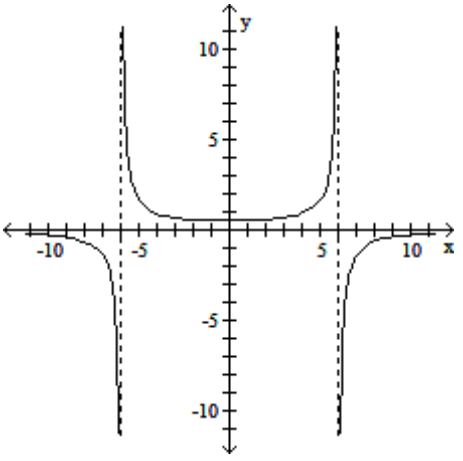
4) $(5x - 5)^{2/3} - 3 = 13$ 4) _____

A) $\left\{\frac{69}{5}\right\}$ B) $\left\{-\frac{59}{5}, \frac{69}{5}\right\}$ C) $\left\{-\frac{11}{5}, \frac{21}{5}\right\}$ D) $\left\{-\frac{59}{5}\right\}$

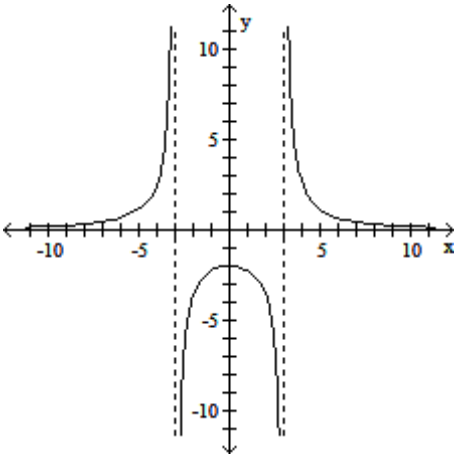
Match the rational function with the appropriate graph.

5) $f(x) = \dfrac{18}{x^2 + 9}$ 5) _____

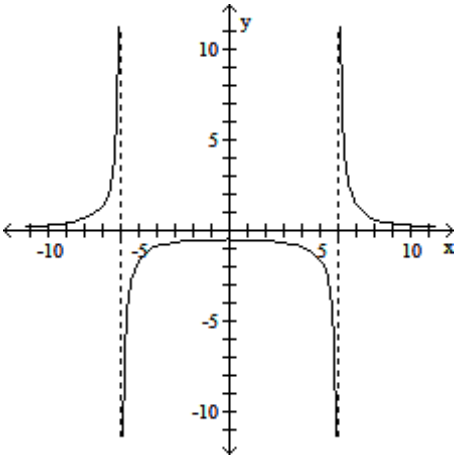
A)



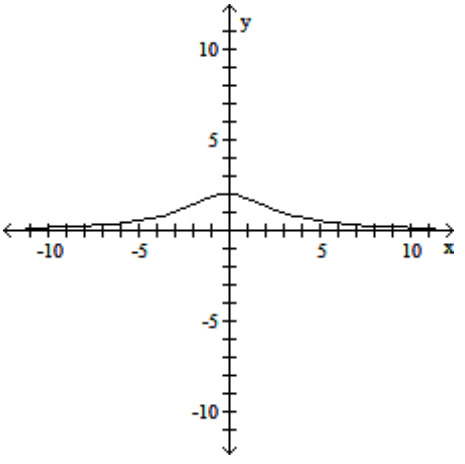
B)



C)



D)



Find the exponential function of the given form that contains the given point(s).

6) Form: $f(x) = c \cdot a^x$ 6) _____
Points: (0, 5) and (2, 20)

A) $f(x) = 5 \cdot 2^x$ B) $f(x) = 2$ C) $f(x) = 10^x$ D) $f(x) = 2^x$

Solve the problem.

7) The number of bacteria growing in an incubation culture increases with time according to $n(t) = 5200(5)^t$, where t is time in days. After how many days will the number of bacteria in the culture be 650,000? 7) _____

A) 10 days B) 1 day C) 6 days D) 3 days

8) A bacterial culture has an initial population of 10,000. If its population declines to 7000 in 2 hours, what will it be at the end of 4 hours? Assume that the population decreases according to the exponential model. 8) _____

A) 1500 B) 4900 C) 2450 D) 9031

9) A lake is stocked with 670 fish of a new variety. The size of the lake, the availability of food, and the number of other fish restrict growth in the lake to a limiting value of 4187. The population of fish in the lake after time t, in months, is given by the function, $P(t) = \frac{4187}{1 + 4.69e^{-0.35t}}$. Find the population after 10 month(s). 9) _____

A) 3658 B) 3678 C) 3668 D) 3683

10) A pendulum swings through an angle of 30° each second. If the pendulum is 55 inches long, how far does its tip move each second? If necessary, round the answer to two decimal places. 10) _____

A) 26.95 inches B) 31.23 inches C) 28.8 inches D) 30.09 inches

11) A surveyor is measuring the distance across a small lake. He has set up his transit on one side of the lake 90 feet from a piling that is directly across from a pier on the other side of the lake. From his transit, the angle between the piling and the pier is 35°. What is the distance between the piling and the pier to the nearest foot? 11) _____

A) 63 feet B) 129 feet C) 74 feet D) 52 feet

In questions 138, 139, 140, complete the identity.

12) $\frac{\cos x - \sin x}{\cos x} + \frac{\sin x - \cos x}{\sin x} = ?$ 12) _____

A) sec x csc x B) 2 - sec x csc x C) 2 + sec x csc x D) 1 - sec x csc x

Write a rational function that models the problem's conditions.

13) The area of a rectangular rug is 370 square feet. Express the perimeter of the rug, P, as a function of the length of the rug, x. 13) _____

A) $P(x) = 2x + \frac{x}{740}$ B) $P(x) = x(370 - x)$

C) $P(x) = 2x + \frac{740}{x}$ D) $P(x) = 2x + \frac{370}{x}$

Find the length of the arc on a circle of radius r intercepted by a central angle θ. Round answer to two decimal places.

14) r = 13.65 inches, $\theta = 330°$ 14) _____

A) 78.92 inches B) 78.82 inches C) 78.62 inches D) 78.72 inches

Find the radian measure of the central angle of a circle of radius r that intercepts an arc of length s.

15) r = 2.7 meters, s = 4.32 meters 15) _____

A) 0.37 radians B) 1.6 radians C) 3.5 radians D) 1.35 radians

Complete the identity.

16) csc x(sin x + cos x) = ? 16) _____

A) sin x tan x B) 1 + cot x C) $-2 \tan^2 x$ D) sec x csc x

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

17) $3^{(3x - 6)} = 27$ 17) _____

A) $\left\{\frac{1}{9}\right\}$ B) {3} C) {9} D) {-3}

Answer Key
Testname: 1730 FINAL EXAM REVIEW PART 2

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