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Exam Ia Math 121 Fall 2013 2.1–2.5, 3.1, 3.3, 3.5, 4.1–4.6, 5.1, 5.2 TA:

Name_____

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

Find the domain of the function.

1) $\frac{x}{\sqrt{x-6}}$ 1) _____

A) $\{x \mid x \neq 6\}$ B) $\{x \mid x > 6\}$

C) $\{x \mid x \geq 6\}$ D) all real numbers

Use the Factor Theorem to determine whether x – c is a factor of f(x). Show Work

2) $f(x) = x^4 + 10x^3 + 3x^2 + 28x - 20;\ x - 10$ 2) _____

A) Yes B) No

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

Find the average rate of change for the function between the given values.

3) $f(x) = x^2 + 7x$; from 1 to 5 Show Work 3) _____

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

Find the vertex and axis of symmetry of the graph of the function.

4) $f(x) = -11x^2 - 2x - 4$ 4) _____

A) $\left(-\frac{1}{11}, -\frac{43}{11}\right); x = -\frac{1}{11}$ B) $\left(-11, -\frac{43}{11}\right); x = -11$

C) $\left(\frac{1}{11}, \frac{43}{11}\right); x = \frac{1}{11}$ D) $(11, -4); x = 11$

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

Give the equation of the horizontal asymptote, if any, of the function.

5) $h(x) = \dfrac{9x^2 + 22x - 99}{55x^2 - 4x - 777}$ 5) _____

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

Form a polynomial whose zeros and degree are given. Show Work

6) Zeros: $-1, 1, -3$; degree 3 6) _____

A) $f(x) = x^3 - 3x^2 - x + 3$ for $a = 1$

B) $f(x) = x^3 + 3x^2 - x - 3$ for $a = 1$

C) $f(x) = x^3 - 3x^2 + x - 3$ for $a = 1$

D) $f(x) = x^3 + 3x^2 + x + 3$ for $a = 1$

Find the domain of the rational function.

7) $g(x) = \dfrac{x}{x^3 - 216}$ 7) _____

A) $\{x|x \neq -6\}$ B) $\{x|x \neq 36\}$ C) $\{x|x \neq -6, 6\}$ D) $\{x|x \neq 6\}$

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List the potential rational zeros of the polynomial function. Do not find the zeros.

8) $f(x) = -2x^3 + 3x^2 - 2x + 8$ 8) _____

A) $\pm\frac{1}{2}, \pm 1, \pm 2, \pm 4, \pm 8$

B) $\pm\frac{1}{2}, \pm 1, \pm 2, \pm 4$

C) $\pm\frac{1}{4}, \pm\frac{1}{2}, \pm 1, \pm 2, \pm 4, \pm 8$

D) $\pm\frac{1}{8}, \pm\frac{1}{4}, \pm\frac{1}{2}, \pm 1, \pm 2, \pm 4, \pm 8$

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

Solve the inequality. Show Work

9) $12(x^2 - 1) > 7x$ 9) _____

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

For the given functions f and g, find the requested composite function value.

10) $f(x) = 2x + 4$, $g(x) = 2x^2 + 1$; Find $(g \circ g)(1)$. 10) _____

A) 10 B) 19 C) 16 D) 73

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

The function f is one-to-one. Find its inverse. Show work

11) $f(x) = 19x + 7$ 11) _____

Use the given zero to find the remaining zeros of the function. Show work

12) $f(x) = x^3 - 2x^2 - 11x + 52$; zero: -4 12) _____