> TAKE ASSESSMENT: EXAM 3

📖 Take Assessment: Exam 3

Name	Exam 3
Instructions	
Multiple Attempts	This Test allows 2 attempts. This is attempt number 1.
Force Completion	This Test can be saved and resumed later.

▼ **Question Completion Status:**

Question 1   5 points   Save

Solve the inequality.

$x(x - 5) \geq -6$

- ○ $[3, \infty)$
- ○ $[2, 3]$
- ○ $(-\infty, 2]$ or $[3, \infty)$
- ○ $(-\infty, 2]$

Question 2   5 points   Save

State whether the function is a polynomial function or not. If it is, give its degree. If it is not, tell why not.

$f(x) = \dfrac{8 - x^3}{8}$

- ○ Yes; degree 3
- ○ No; x is a negative term
- ○ No; it is a ratio
- ○ Yes; degree 1

Question 3   5 points   Save

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

$h(x) = \dfrac{8x^2 - 3x - 2}{2x^2 - 2x + 9}$

- ○ y = 4x
- ○ y = 4
- ○ y = x + 4

○ no oblique asymptote

Question 4 **5 points** Save

Determine where the function is increasing and where it is decreasing.

$f(x) = -x^2 - 4x + 5$

○ increasing on $(-\infty, 9)$
decreasing on $(9, \infty)$

○ increasing on $(-2, \infty)$
decreasing on $(-\infty, -2)$

○ increasing on $(-\infty, -2)$
decreasing on $(-2, \infty)$

○ increasing on $(9, \infty)$
decreasing on $(-\infty, 9)$

Question 5 **5 points** Save

Find the domain of the rational function.

$g(x) = \dfrac{x + 2}{x^2 - 64}$

○ all real numbers

○ $\{x | x \neq -8, x \neq 8, x \neq -2\}$

○ $\{x | x \neq -8, x \neq 8\}$

○ $\{x | x \neq 0, x \neq 64\}$

Question 6 **5 points** Save

Find the vertical asymptotes of the rational function.

$g(x) = \dfrac{x}{x^3 - 343}$

○ $x = -7, x = 7$

○ $x = 7$

○ $x = -7$

○ $x = 49$

Question 7 **5 points** Save

Solve the inequality.

$x^2 + 6x \geq 0$

○ $(-\infty, -6]$ or $[0, \infty)$

○ $(-\infty, 0]$ or $[6, \infty)$

○ [0, 6]
○ [-6, 0]

Question 8   **5 points**   Save

Form a polynomial f(x) with real coefficients having the given degree and zeros.

Degree: 4; zeros: -1, 2, and 1 - 2i.

○ $f(x) = x^4 - 3x^3 + 5x^2 - x - 10$
○ $f(x) = x^4 - 3x^3 - 3x^2 + 7x + 6$
○ $f(x) = x^4 - x^3 + x^2 + 9x - 10$
○ $f(x) = x^4 - x^3 + 3x^2 - 5x - 10$

Question 9   **5 points**   Save

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

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

○ $\pm \dfrac{1}{6}, \pm \dfrac{1}{3}, \pm \dfrac{1}{2}, \pm \dfrac{2}{3}, \pm 1, \pm 2, \pm 3$

○ $\pm \dfrac{1}{2}, \pm \dfrac{3}{2}, \pm 1, \pm 2, \pm 3, \pm 6$

○ $\pm \dfrac{1}{6}, \pm \dfrac{1}{3}, \pm \dfrac{1}{2}, \pm \dfrac{2}{3}, \pm 1, \pm 2$

○ $\pm \dfrac{1}{6}, \pm \dfrac{1}{3}, \pm \dfrac{1}{2}, \pm 1, \pm 2$

Question 10   **5 points**   Save

Find the x- and y-intercepts of f.

$f(x) = 9x - x^3$

○ x-intercepts: 0, 3, -3; y-intercept: 0
○ x-intercepts: 0, -9; y-intercept: 9
○ x-intercepts: 0, 3, -3; y-intercept: 9
○ x-intercepts: 0, -9; y-intercept: 0

Question 11   **5 points**   Save

Form a polynomial whose zeros and degree are given.

Zeros: 0, - 7, 6; degree 3

○ $f(x) = x^3 + x^2 + x - 42$ for a = 1
○ $f(x) = x^3 + x^2 + 42x$ for a = 1

○ $f(x) = x^3 + x^2 - 42x$ for $a = 1$

○ $f(x) = x^3 + x^2 + x + 42$ for $a = 1$

Question 12   **5 points**   Save

Use the intermediate value theorem to determine whether the polynomial function has a zero in the given interval.

$f(x) = -2x^4 + 2x^2 + 4; [-2, -1]$

○ $f(-2) = 20$ and $f(-1) = 5$; no

○ $f(-2) = -20$ and $f(-1) = 4$; yes

○ $f(-2) = 20$ and $f(-1) = -4$; yes

○ $f(-2) = -20$ and $f(-1) = -4$; no

Question 13   **5 points**   Save

Solve.

The volume V of a given mass of gas varies directly as the temperature T and inversely as the pressure P. A measuring device is calibrated to give $V = 364 \text{ in}^3$ when $T = 260°$ and $P = 10 \text{ lb/in}^2$. What is the volume on this device when the temperature is $300°$ and the pressure is 25 lb/in^2?

○ $V = 168 \text{ in}^3$

○ $V = 188 \text{ in}^3$

○ $V = 148 \text{ in}^3$

○ $V = 12 \text{ in}^3$

Question 14   **5 points**   Save

Find the domain of the rational function.

$g(x) = \dfrac{x + 5}{x^2 + 49x}$

○ all real numbers

○ $\{x | x \neq -7, x \neq 7, x \neq -5\}$

○ $\{x | x \neq -7, x \neq 7\}$

○ $\{x | x \neq 0, x \neq -49\}$

Question 15   **5 points**   Save

Solve the problem.

One solution of $x^3 - 5x^2 + 5x - 1 = 0$ is 1. Find the other two solutions.

○ $\{2 + 2\sqrt{3}, 2 - 2\sqrt{3}\}$

○ $\{4 + \sqrt{3}, 4 - \sqrt{3}\}$

○ $\{2 + \sqrt{3}, 2 - \sqrt{3}\}$

○ $\{4 + 2\sqrt{3}, 4 - 2\sqrt{3}\}$

Question 16
5 points Save

Determine the domain and the range of the function.

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

○ domain: $\{x|x \le -1\}$
range: $\{y|y \le 4\}$

○ domain: all real numbers
range: $\{y|y \le 4\}$

○ domain: all real numbers
range: $\{y|y \le -4\}$

○ domain: $\{x|x \le -1\}$
range: $\{y|y \le -4\}$

Question 17
5 points Save

Determine whether the rational function has symmetry with respect to the origin, symmetry with respect to the y-axis, or neither.

$f(x) = \dfrac{15}{x^2 - 19}$

○ symmetry with respect to the y-axis

○ symmetry with respect to the origin

○ neither

Question 18
5 points Save

Find the vertical asymptotes of the rational function.

$f(x) = \dfrac{x - 2}{4x - x^3}$

○ x = 0, x = -2

○ x = 0, x = 2

○ x = 0, x = -2, x = 2

○ x = -2, x = 2

Question 19
5 points Save

Solve the inequality.

$(x - 5)(x^2 + x + 1) >$

○ (-∞, -1) or (1, ∞)

○ (-1, 1)

○ (-∞, 5)

○ (5, ∞)

Question 20　　　　　　　　　　　　　　　　　　　　　　　　**5 points**　　Save

Find the vertical asymptotes of the rational function.

$$h(x) = \frac{x + 11}{x^2 - 9x}$$

○ x = -3, x = 3

○ x = 0, x = 9

○ x = 9, x = -11

○ x = 0, x = -3, x = 3

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