

Name KEY

Date _____ Period _____

PreAP Precalculus TEST 1: 1.1-1.3-A

NO CALCULATORPart I: **Multiple Choice**

You may do all work for the multiple choice section on scratch paper or below each problem. Attach all scratch work to the back of this test when you turn it in. Write the **CAPITAL LETTER** of the correct response in the blank to the left of the question number.

B 1. Simplify each of the following rational expressions to a single term. $\frac{x^2 - 5x - 24}{x^2 - 13x + 40} \div \frac{x^2 - x - 12}{x^2 - 25}$

(A) $\frac{x-5}{x+4}$

(B) $\frac{x+5}{x-4}$

(C) $\frac{x+5}{x-8}$

(D) $\frac{x-4}{x+5}$

(E) $\frac{x-5}{x+3}$

$$\frac{x^2 - 5x - 24}{x^2 - 13x + 40} \cdot \frac{x^2 - 25}{x^2 - x - 12}$$

$$\frac{(x-8)(x+3)}{(x-8)(x-5)} \cdot \frac{(x-5)(x+5)}{(x-4)(x+3)}$$

$$\frac{x+5}{x-4}$$

D 2. Simplify the following expression: $\frac{(x^{-5}y^3)^{-3}}{(x^{-4} \cdot \sqrt{y^5})^{-2}}$

(A) $\frac{x^7}{\sqrt{y^{13}}}$

(B) $\frac{y^9}{x^7}$

(C) $\frac{x^3}{y^4}$

(D) $\frac{x^7}{y^4}$

(E) $\frac{x^7}{y^9}$

$$\frac{(x^{-5}y^3)^{-3}}{(x^{-4}y^{5/2})^{-2}}$$

$$\frac{x^{15}y^{-9}}{x^{-8}y^{-5}}$$

$$x^{(15-8)} \cdot y^{(-9+5)}$$

$$x^7 \cdot y^{-4}$$

$$\frac{x^7}{y^4}$$

C 3. If $f(x) = 3x^2 - 4x + 7$ and $g(x) = 5x - 4$, what is $g(f(x))$?

(A) $15x^2 - 20x + 39$ (B) $3x^2 + x + 3$ (C) $15x^2 - 20x + 31$ (D) $75x^2 - 100x + 25$ (E) $75x^2 - 140x + 71$

$$g(f(x))$$

$$5(3x^2 - 4x + 7) - 4$$

$$15x^2 - 20x + 35 - 4$$

$$15x^2 - 20x + 31$$

Part II: Free Response

Show all work in a logical, vertical sequence and use proper notation. Work each problem in the box provided for that answer.

8. If $f(x) = x^2 - 3x + 7$ and $g(x) = -4x + 2$

(a) Evaluate and simplify $f(-3)$

$$\begin{aligned} &(-3)^2 - 3(-3) + 7 \\ &9 + 9 + 7 \\ &18 + 7 \\ &25 \quad (\checkmark_1) \end{aligned}$$

(b) Evaluate and simplify $f(g(x))$

$$\begin{aligned} &(-4x+2)^2 - 3(-4x+2) + 7 \quad (\checkmark_2) \\ &16x^2 - 16x + 4 + 12x - 6 + 7 \quad \text{for setup} \\ &16x^2 - 4x + 5 \quad (\checkmark_3) \end{aligned}$$

(c) Evaluate and simplify $g(f(2))$

$$-4((2)^2 - 3(2) + 7) + 2 \quad (\sqrt{4}) \text{ for } f(z) = 5$$

$$-4(4 - 6 + 7) + 2$$

$$-4(5) + 2$$

$$-20 + 2$$

$$-18 \quad (\sqrt{5})$$

(d) Evaluate and simplify completely: $\frac{f(x+h) - f(x)}{h}$

$$\frac{(x+h)^2 - 3(x+h) + 7 - (x^2 - 3x + 7)}{h} \quad (\sqrt{6}) \text{ setup}$$

$$\frac{\cancel{x^2} + 2xh + \cancel{h^2} - \cancel{3x} - 3h + 7 - \cancel{x^2} + \cancel{3x} - 7}{h}$$

$$\frac{\cancel{h}(2x + h - 3)}{\cancel{h}}$$

$$2x + h - 3 \quad (\sqrt{7})$$