

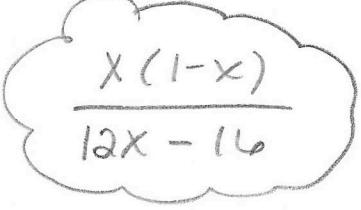
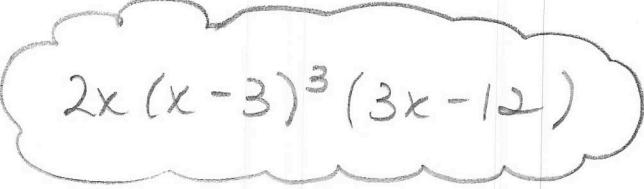
Name Rey28pts

DUE DATE: _____

Directions:

- Read each problem carefully and use your knowledge of mathematics to determine your answer.
- In order to receive FULL CREDIT you must either SHOW ALL WORK or EXPLAIN how you got your answer!! PLEASE NOTE: A multiple choice answer alone without any work will only receive half credit.

2pts each

Question	Your Work/Explanation
1) Simplify: $\frac{4x \left(\frac{1-x}{4} \right)}{4x \left(3 - \frac{4}{x} \right)}$ 	$\frac{1-x}{4} \cdot \frac{x}{3x-4}$ $\frac{x(1-x)}{12x-16}$
2) Factor completely: $8x(x-3)^4 - 2x^2(x-3)^3$	$2x(x-3)^3 (4(x-3) - x)$ 
3) Which of the following expressions is equivalent to $\left(\frac{1}{2}a^3\right)^2 (4a^5)^3$?	$\frac{1}{4}a^6 \cdot 64a^{15}$ $16a^{21}$ <p>a) $2a^{13}$ b) $16a^{13}$ c) $2a^{21}$ d) $16a^{21}$</p>

4) Find the horizontal asymptotes, if any,

$$\text{of the graph of } f(x) = \frac{3x^2 + 1}{3x^5 + 4}$$

- a) $y = 1$
 b) $y = 2$
 c) $y = 0$
 d) none

$$\frac{0x^5}{3x^5}$$

$$y = 0$$

5) Solve for x : $3\ln e^{2x+1} - 17 = 10$

a) $\frac{-1+\ln 9}{2}$
 b) $\frac{9}{2\ln e} - \frac{1}{2}$

- c) 23
 d) 4

$$3\ln e^{2x+1} = 27$$

$$3(2x+1) = 27$$

$$6x + 3 = 27$$

$$6x = 24$$

$$x = 4$$

6) Multiply or find the special product:

$$(3x + y^7)^3$$

- a) $x^3 + 9x^2y^7 + 18xy^{14} + 3y^{21}$
 b) $27x^3 + 27x^2y^7 + 9xy^{14} + y^{21}$
 c) $27x^3 + 9x^2y^7 + 3xy^{14} + y^{21}$
 d) $27x^3 + y^{21}$

$$(3x + y^7)(3x + y^7)(3x + y^7)$$

$$(9x^2 + 6xy^7 + y^{14})(3x + y^7)$$

$$27x^3 + 9x^2y^7 + 18x^2y^7 + 6xy^{14} + 3xy^{14} + y^{21}$$

7) Evaluate $g(n-2)$ for the function

$$g(x) = \frac{x^2 - 6}{3x}$$
 and simplify.

$$\frac{(n-2)^2 - 6}{3(n-2)} = \frac{n^2 - 4n + 4 - 6}{3n - 6}$$

$$\boxed{\frac{n^2 - 4n - 2}{3n - 6}}$$

8) Solve for x : $3^{1-x} = 5^x$

a) $\ln \frac{1}{5}$

b) $\ln \frac{3}{5}$

c) $\frac{\ln 3}{\ln 15}$

d) $(\ln 3)(\ln 15)$

$$(1-x)\ln 3 = x \ln 5$$

$$\ln 3 - x \ln 3 = x \ln 5$$

$$\ln 3 = x (\ln 5 + \ln 3)$$

$$x = \frac{\ln 3}{\ln 15}$$

9) Factor completely: $6x^2 - 38x - 28$

$$2(3x^2 - 19x - 14)$$

$$3x^2 - 21x + 2x - 14$$

$$3x(x-7) + 2(x-7)$$

$$2(3x+2)(x-7)$$

6.7
3.14
2.21

10) Use the properties of logarithms to expand: $\log_b \left(\frac{x^3 y^2}{\sqrt{w}} \right)$

a) $x^3 + y^3 - \sqrt{w}$

b) $\frac{1}{3} \log_b x + \frac{1}{2} \log_b y - 2 \log_b w$

c) $3 \log_b x + 2 \log_b y - \frac{1}{2} \log_b w$

d) $\frac{3 \log x + 2 \log y}{(1/2) \log w}$

11) Simplify:

$$7\sqrt{27x^5y^2} - 4x\sqrt{75x^3y^2} + 2x^2\sqrt{12xy^2}$$

$$7 \cdot \cancel{9x^4y^2} \sqrt{3x} - 4x \sqrt{25x^3y^2} \sqrt{3x} + 2x^2 \sqrt{4y^2} \sqrt{3x}$$

$$7(3xy) \quad -4x(5xy) \quad +2x^2, 2y$$

$$21x^2y\sqrt{3x} - 20x^2y\sqrt{3x} + 4x^2y\sqrt{3x}$$

$5x^2y\sqrt{3x}$

12) Divide: $(3x^4 - x + 1) \div (x^2 + 1)$

$$\begin{array}{r} 3x^2 - 3 \\ x^2 + 1 \overline{)3x^4 \dots - x + 1} \\ - 3x^4 + 3x^2 \\ \hline -3x^2 - x + 1 \\ + 3x \quad + 3 \\ \hline -x + 4 \end{array}$$

$3x^2 - 3 + \frac{-x + 4}{x^2 + 1}$