Name _____

BAKER UNIVERSITY
INTERMEDIATE ALGEBRA (MA-140)
PRACTICE TEST 3

READ carefully, **SHOW** all work, and **CIRCLE** answers

GOOD LUCK!

Chapter 4

1. Find the domain $\dfrac{x-1}{(x-2)(x-3)}$.

A. $(-\infty, 2) \cup (2, \infty)$
B. $(-\infty, 3) \cup (3, \infty)$
C. $(-\infty, 2) \cup (2, 3) \cup (3, \infty)$
D. $(-\infty, \infty)$
E. $(-\infty, 1) \cup (1, \infty)$

2. Simplify $\dfrac{x+2}{x^2+5x+6}$.

A. $\dfrac{1}{x+2}$
B. $\dfrac{1}{x+3}$
C. $\dfrac{x+2}{x^2+5x+6}$
C. $\dfrac{1}{x-2}$
C. $\dfrac{1}{x-3}$

3. Find $f(1)$ for the function $f(x) = \dfrac{2x-1}{2x+1}$.

A. $\dfrac{1}{2}$

B. $\dfrac{1}{3}$

C. Undefined

D. $\dfrac{1}{4}$

E. $\dfrac{1}{5}$

4. Simplify $\dfrac{\dfrac{x^2}{x-1}}{\dfrac{x}{x^2-1}}$.

A. $\dfrac{x}{x+1}$
B. x
C. $\dfrac{x+1}{x}$
D. $x(x+1)$
E. x^3

5. Add and simplify $\dfrac{x+1}{x-1} - \dfrac{4x}{x^2-1}$.

A. $\dfrac{x-1}{x+1}$
B. $\dfrac{x+1}{x-1}$
C. $\dfrac{4x}{x^2-1}$
D. $\dfrac{x^2-4x}{x^2-1}$
E. $\dfrac{1-3x}{x-x^2}$

6. Add and simplify $\dfrac{1}{x(x+1)} - \dfrac{1}{x} + \dfrac{1}{x+1}$.

A. $\dfrac{x+1}{x-1}$
B. $\dfrac{x-1}{x+1}$
C. 0
D. -1
E. 1

7. Divide: $\dfrac{x^3-6x^2-4x+2}{x+2}$.

A. $x^2-4x-11-\dfrac{21}{x+2}$
B. $x^2-8x+12-\dfrac{25}{x+2}$
C. $x^2-4x+5-\dfrac{9}{x+2}$
D. $x^2-8x+12-\dfrac{22}{x+2}$
E. $x^3-8x^2+12x-22$

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

A. $x^2 - 2 - \dfrac{6x + 2}{x^2 + 3x + 1}$
B. $x^2 - 4$
C. $x^2 + 2 - \dfrac{18x - 6}{x^2 + 3x + 1}$
D. $x^2 - 4x$
E. $x^2 + 4$

9. Divide $(x^4 - 2x^3 + x^2 + 6x - 12) \div (x^2 - 2x + 4)$.

A. $x^4 - 2x^3 - 5$
B. $x^2 + 3$
C. $x^2 - 3$
D. $x^2 - 3 - \dfrac{24}{x^2 - 2x + 4}$
E. $x^2 - 4x + 13 + \dfrac{40 - 36x}{x^2 - 2x + 4}$

10. Dividen: $(x^3 + 4x^2 - 3x + 10) \div (x + 5)$.

A. 0
B. $x^2 - 3x + 2$
C. $5x^2 - 3x + 2$
D. $x^2 + 9x + 42$
E. $x^2 + 4x - 1$

Chapter 5

1. Simplify: $\dfrac{2x^{-2}y^2}{xy^{-2}}$.

A. $\dfrac{2y^4}{x^3}$
B. $\dfrac{y^4}{2x^3}$
C. $\dfrac{2y}{x}$
D. 2
E. $2x$

2. Simplify: $(1 + x^{-1})^{-1}$.

A. $1 + x$
B. $-1 + x$
C. $\dfrac{1+x}{x}$
D. $\dfrac{x}{x+1}$
E. $x(x + 1)$

3. Evaluate without using a calculator: $\dfrac{9 \times 10^6}{3 \times 10^3}$.

A. $6,000$
B. 300
C. $3,000$
D. 30
E. 600

4. Evaluate without using a calculator: $81^{3/4}$.

A. 27
B. $\dfrac{1}{27}$
C. $\dfrac{243}{4}$
D. $\dfrac{4}{\sqrt[3]{81}}$
E. 9

5. Simplify: $x^{1/2} \cdot x^{1/3} \cdot x^{1/6}$.

A. $x^{1/36}$
B. x^6
C. $x^{5/6}$
D. $x^{1/11}$
E. x

6. Simplify: $\sqrt[3]{\dfrac{x^6}{8y^3}}$.

A. $\dfrac{x^2}{2}$
B. $\dfrac{x^2}{2y}$
C. $\dfrac{x^3}{2y}$
D. $\dfrac{x^2}{2y^2}$
E. $\dfrac{x^3}{2y^2}$

7. Rationalize the denominator and simplify: $\dfrac{10}{\sqrt{20}}$.

A. $\sqrt{5}$
B. $\dfrac{1}{\sqrt{5}}$
C. $\dfrac{\sqrt{5}}{2}$
D. 1
E. $\dfrac{1}{\sqrt{2}}$

8. Multiply and simplify: $(2+\sqrt{x})^2$.

A. $4-x$
B. $4+x$
C. $4+2\sqrt{x}+x$
D. $4+4\sqrt{x}+x$
E. $4+2\sqrt{x}$

9. Rationalize the denominator and simplify $\dfrac{2}{\sqrt{3}-1}$.

A. $\sqrt{3}-1$
B. $\sqrt{3}+1$
C. $\dfrac{1}{3+2\sqrt{3}}$
D. $\dfrac{1+\sqrt{3}}{3+2\sqrt{3}}$
E. $\dfrac{2\sqrt{3}}{3-\sqrt{3}}$

10. Find $f(2+\sqrt{3})$ for the function $f(x) = x^2 - 2x + 1$.

A. $4 + \sqrt{3}$
B. $4\sqrt{3}$
C. $4 + 2\sqrt{3}$
D. $2 + 2\sqrt{3}$
E. $2 + 4\sqrt{3}$

11. Solve for x: $\sqrt{2x+1} = 5$

A. $x = 2$
B. $x = 7$
C. $x = 12$
D. $x = 17$
E. $x = 22$

12. Solve for x: $\sqrt{2x+1} = \sqrt{x+8}$

A. $x = 2$
B. $x = 7$
C. $x = 12$
D. $x = 17$
E. $x = 22$

EXTRA CREDIT: Simplify $\sqrt{(2-\sqrt{2})^2 + 2(2-\sqrt{2})(2+\sqrt{2}) + (2+\sqrt{2})^2}$.