

MATH ANALYSIS I HONORS  
 Review for 50pt Test-2016  
 Exponents Ch. 5  
 No calculators

NAME \_\_\_\_\_  
 DATE \_\_\_\_\_  
 PERIOD \_\_\_\_\_

Simplify

1.  $(3^{-2} + 3)^{-1}$   $\frac{9}{28}$

6.  $8^{\frac{2}{3}}$  4

2.  $\left(\frac{9}{25}\right)^{\frac{1}{2}}$   $\frac{5}{3}$

7.  $\sqrt{3^2 9^2 9}$   
 $3^2 3^4 3^2 = (3^8)^{\frac{1}{2}} = 3^4$   
 81

3.  $\frac{n^5 - 3n^2}{n^2}$   $n^3 - 3$

8.  $3\sqrt[3]{x^{-1}} (\sqrt[3]{x} - 4\sqrt[3]{x^2})$   
 $3 - 12\sqrt[3]{x}$

4.  $\frac{(2a^{-1})^2}{(2a^{-1})^{-2}}$   $\frac{16}{a^4}$

9.  $\frac{2^{-4} 2^3}{2^2}$   $\frac{2^{-4} 2^3}{2^2} = \frac{2^{-1}}{2^2} = 2^{-3} = \frac{1}{8}$   
 -1-2

5.  $\frac{9a^{1/2} b^{-1/2} - 6a^2 b^{1/2}}{12ab^{2/3}}$   $\frac{3}{4\sqrt{a}\sqrt[3]{b^2}} - \frac{1a}{2\sqrt[3]{b}}$

Solve for x:

10.

11.  $2^{2-x} = 8^{4-x}$

$2^{2-x} = 2^{12-3x}$

$2-x = 12-3x$

~~$2-x+4-y$   
 $-4+x-4-y$   
 $-2 = 0$   
 No solution~~

12.  $9^x = 3^{10}$

$3^{2x} = 3^{10}$

$2x = 10$

$x = 5$

13.

$-10 = -2x$   
 $5 = x$

Simplify each expression:

14)  $\frac{3^5 \cdot 3^{-3}}{3^{-2}} = \frac{3^2}{3^{-2}} \quad 3^4 = 81$

15)  $(2^{-2} - 4^{-2})^{-1} = \frac{16}{3}$

16)  $\sqrt[3]{\frac{8^{-1}}{8^{-7}}} = (8^6)^{1/3} = 8^2$

17)  $(64^{2/3})^{1/2} = 4$

18)  $\sqrt[4]{x^3} \cdot \sqrt[5]{x^4} = x^{3/4} \cdot x^{4/5} = x^{31/20} = \sqrt[20]{x^{31}}$

19)  $\frac{6x^{-4/3} + 2x^{5/3}}{2x^{-1/3}} = \frac{3}{x} + x^2$

20)  $\frac{(6x^{-4/3})(2x^{2/3})}{2x^{-1/3}} = \frac{6}{\sqrt[3]{x}}$

21)  $(16x^{16})^{-1/4} = \frac{1}{2} x^{-4} = \frac{1}{2x^4}$

22)  $\sqrt[3]{(2^3)(8)(4^3)(64)} = \sqrt[3]{2^3 \cdot 2^3 \cdot 2^6 \cdot 2^6} = \sqrt[3]{2^{18}} = 2^{18/3} = 2^6 = 64$

Solve each equation:

23)  $4^x = \frac{8}{16^x}$

$2^{2x} = \frac{2^3}{2^{4x}} \quad 2^{2x} = 2^{3-4x}$

Simplify

25)  $x \frac{1}{x} - 3x$   
 $x \frac{1}{x} + 3x$

$\frac{1-3x}{1+3x}$

26)  $\frac{d^{-2} - c^{-2}}{c^{-1} - d^{-1}}$

$\frac{(c+d)(c-d)}{c^2 - d^2} = \frac{c+d}{d^2c - dc^2} = \frac{c+d}{-cd(d+c)} = \frac{c+d}{-cd}$

$\frac{1}{d^2} - \frac{1}{c^2} = \frac{c^2 - d^2}{c^2 d^2} = \frac{1}{c} - \frac{1}{d}$

$\frac{c+d}{-cd}$

$\frac{1}{2}$