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# ***Final Exam Review***

## ***Math 096***

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# **Final Exam Review (096)**

## **Chapter 2, Chapter 9**

**Solve:**

1)  $\frac{1}{2}x - \frac{1}{6} = \frac{5}{6}$

2)  $4(x + 5) - 9 = 2(2x + 3) + 1$

3)  $0.2x - 1.8 = 2.3x - 4.5 - 1.8x$

**Solve, Graph and write answer in interval notation:**

4)  $3 - 2x \leq 21 + 4x$

5)  $-5y - 4 > -2y + 2$

6)  $3x - 2 \geq 4$  and  $4x + 2 \geq 1$

7)  $2x - 3 < 3$  or  $x - 4 > 1$

8)  $-1 < 2x + 5 \leq 7$

**Solve:**

9) what number is 12% of 75?

10) 32.2 is what percent of 92?

11) 24 is 2% of what number?

12) Solve  $k = \frac{5}{x-2}$  for  $x$

**Find the intersection:**

13)  $\{2,3,5,11,13\} \cap \{1,4,5,13\}$

14)  $\{3,6,8,12\} \cap \{7,14,16\}$

**Find the union:**

15)  $\{3,6,8,12\} \cup \{3,7,12,14\}$

16)  $\{1,2,3\} \cup \emptyset$

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# Final Exam Review (096)

## Chapter 4

**Simplify:**

1)  $2x^2(-3x^5)^2$

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

3)  $\left(\frac{x^2y^{-3}}{2^{-2}yx}\right)^{-2}$

4) **Evaluate the polynomial**  $x^4 - 5x + 6$  **for**  $x = -3$

5) **Identify the coefficient of each term of the polynomial:**

$$\frac{3}{2}x^3 - 2x + 5$$

6) **Identify the degree of each term and the degree of the polynomial:**

$$2x^3 - 4x^4 + 2x - 3$$

7) **Classify the polynomial**  $3x^2 - 2x$

**as a monomial, a binomial, a trinomial, or none of these.**

8) **Collect like terms and then arrange in descending order:**

$$4 - 5x^2 + 3x^3 + 6x^2 - 8x - 7x + x^4$$

**Add or Subtract:**

9)  $(6x^5 - x^2 + 5) + (4x^5 - 9^4 + 3x^3 + 2x^2 - x + 5)$

10)  $(3x^4 + 5x^3 - 9x^2 + x - 2) - (8x^4 + 3x^2 + 6x)$

11)  $(a^2 - 8a^3b^2 + 3b^3) - (-4a^3b^2 + 2ab - b^3 + 6a)$

**Multiply:**

12)  $-3x^2(2x^3 + 4x - 8)$

13)  $(5x + 3)(x^2 - 8x + 1)$

14)  $(8t + 3)^2$

**Divide:**

15)  $\frac{30x^6 - 45x^3 + 15x^2}{5x^2}$

16)  $(33x^5 - 27x^3 + 9x^2) \div (3x^2)$

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### Chapter 10

**Simplify:**

1)  $\sqrt[15]{x^3}$

2)  $(\sqrt[6]{ab})^{12}$

3)  $\sqrt[4]{162x^5}$

4)  $\sqrt[3]{54x^6}$

5)  $\sqrt[4]{32x^{12}y^5}$

6)  $\sqrt[3]{3a^2} \sqrt[3]{6a^4}$

7)  $\frac{\sqrt{32x^5y}}{\sqrt{16xy}}$

8)  $\frac{\sqrt[3]{250x^4y^7}}{\sqrt[3]{2x^2y}}$

9)  $\sqrt[4]{\frac{3x^4y^8}{z^4}}$

10)  $\sqrt[3]{\frac{625a^{12}}{5a^3}}$

11)  $\frac{\sqrt[4]{16x^{12}y^8z^4}}{2xyz}$

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### Chapter 5

#### Factor:

1)  $6x^2 - 30$

2)  $14a^2 + 21a - 7$

3)  $2t^3 - 4t^2 + 8t$

4)  $21a^{10}b^5 + 14a^8b^6 + 7a^{12}b$

5)  $x^2 + 13x + 30$

6)  $x^2 - 6x - 27$

7)  $w^2 + 7w - 78$

8)  $3x^3 + 36x^2 + 60x$

9)  $-z^3 + 5z^2 + 36z$

10)  $5 - 10w + 5w^2$

11)  $t^2 - 0.49$

12)  $-100 + m^2$

13)  $64x^2 - 25$

14)  $w^4 - 16$

#### Solve:

15)  $x^2 - 6x - 16 = 0$

16)  $a^2 + 12a = 0$

17)  $2x(4x + 5) = 7$

18)  $81y^2 = 100$

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# **Final Exam Review (096)**

## **Chapter 6**

**Find all numbers for which rational expression is not defined.**

1)  $\frac{2x + 5}{x^2 + 6x - 16}$

2)  $\frac{x^2 - 25}{x^2 - 36}$

3)  $\frac{x^2 + 2x + 1}{3}$

**Simplify:**

4)  $\frac{6x + 30}{x^2 - 25}$

5)  $\frac{7x^2 - 21x}{6x}$

6)  $\frac{x^2 + 2x + 1}{x^2 - 6x - 7}$

7)  $\frac{t + 3}{t^2 - 3t} \cdot \frac{t}{t^2 - 9}$

8)  $\frac{x^2 + x - 12}{x^2 - x - 20} \cdot \frac{x^2 + x - 30}{x^2 - 2x - 3}$



$$9) \frac{x+6}{x-3} \div \frac{x+5}{4x-12}$$

$$10) \frac{4x^3+3x^2}{10x-5} \div \frac{4x^2+3x}{16x-8}$$

$$11) \frac{x^2+5x-36}{x^2-2x-8} \div \frac{2x-8}{x^2+8x+12}$$

$$12) \frac{4}{15x} + \frac{5}{6x}$$

$$13) -\frac{2}{9x^3y} + \frac{7}{6x^2y^2}$$

$$14) \frac{x-3}{x+5} + \frac{2}{x+3}$$

$$15) \frac{x^2}{x-3} + \frac{9}{3-x}$$

$$16) \frac{4x}{3x-9} - \frac{9x}{7x-21}$$

$$17) \frac{y+1}{y^2+y-2} - \frac{y+2}{y^2-1}$$

$$18) \frac{x}{x^2-25} - \frac{1}{5-x}$$

$$19) \frac{2-\frac{7}{8}}{1+\frac{3}{4}}$$

$$20) \frac{\frac{1}{a} + 2}{\frac{1}{a} - 3}$$

$$21) \frac{\frac{6}{x^2} + \frac{4}{x}}{\frac{5}{x} - \frac{3}{x^2}}$$

$$22) \frac{\frac{1}{x} + \frac{1}{y}}{\frac{4}{x^2} - \frac{4}{y^2}}$$

**Solve:**

$$23) \frac{2}{3x} + \frac{7}{x} = 1$$

$$24) 2x + 1 = \frac{x + 8}{x}$$

$$25) \frac{t}{t^2 - 9} + \frac{3}{t - 3} = \frac{1}{t + 3}$$

$$26) \frac{x + 4}{x + 2} = \frac{x - 3}{x - 4}$$

$$27) \frac{6}{x} - \frac{6}{x - 2} = -4$$

$$28) -\frac{8}{x^2 + 6x + 8} + \frac{x}{x + 4} = \frac{2}{x + 2}$$

## **Final Exam Review (096)**

### **Chapter 7**

#### **Finding Function Values:**

1) Find  $g(-3)$ , for  $g(x) = 2x^2 - x - 7$

2) Find  $g(a - 2)$ , for  $g(x) = 4x - 3$

#### **Graph:**

3)  $f(x) = 3x - 1$

4)  $f(x) = x^2 + 1$

5)  $f(x) = |x + 2|$

6)  $f(x) = \frac{1}{3}x + 2$

#### **Find the domain:**

7)  $f(x) = 5 - 7x$

8)  $g(x) = \frac{4x}{x - 5}$

9)  $f(x) = \frac{8x - 1}{4}$

10)  $g(x) = |x| + 7$

**Find the slope,  $y$  – intercept and  $x$  – intercept:**

11)  $f(x) = 2x - \frac{1}{2}$

12)  $f(x) = \frac{3}{8}x - 6$

13)  $3x - 2y = -6$

14)  $x + 3y = 2$

15)  $3x - y = 1$

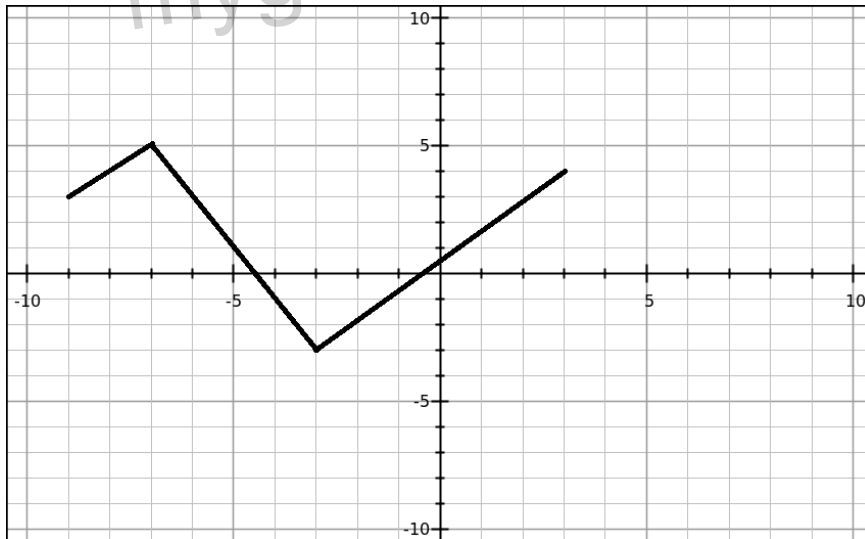
**Find the slope for the given pair of points:**

16) (5,6) and (1,2)

17) (-3,2) and (-1,-8)

18) (7,-5) and (3,2)

For the Graph given below determine the following:



1) Does the graph represent a function?

2) The Domain?

3) All  $x$  - values such that  $f(x) = 5$

4) The Range?

5)  $f(-6)$ ?