

## EXAM 3 REVIEW – MATH 002

The following is a review of the concepts you should know for this exam. This review is a sample and is not intended to mirror the test questions. In addition, any problems similar to those discussed in class or in assigned homework sets may be assessed on the exam.

1. Simplify the following.      a)  $\frac{\frac{x^2 - 4}{x + 2}}{\frac{2x^2 - 3x - 2}{x - 2}}$       b)  $\frac{a + b^{-1}}{a^{-1} + b}$

2. Multiply:  $\frac{x + 2}{x - 3} \cdot \frac{x^2 - 9}{x^2 + x - 2}$

3. Divide:  $\frac{a + 1}{a^2 - a} \div \frac{3a^2 + 6a + 3}{a - 1}$

4. Divide:  $(8x^4y^5 - 3x^3y^4 + 4x^2y^3) \div (2x^2y^2)$

5. Divide:  $(2x^4 - 6x^3 - 4x^2 + 17x - 21) \div (x - 3)$  using two methods.

6. Add:  $\frac{3}{x + 7} + \frac{1}{x - 1}$

7. Subtract:  $\frac{3}{p^2 + 4p + 4} - \frac{2}{p^2 - 4}$

8. Add:  $\frac{a + 2}{2a} + \frac{1 - a}{a^2}$

9. Solve:  $\frac{1}{x} + \frac{1}{x + 1} = \frac{11}{30}$

10. Solve:  $\frac{4}{x + 4} - \frac{x}{x^2 + x - 12} = \frac{2}{x - 3}$

11. Solve:  $\frac{x}{x - 5} = 4 - \frac{7}{x - 5}$

12. Solve:  $\frac{5x - 3}{3x + 7} = \frac{7}{2}$

13. Solve:  $\frac{2}{x + 2} + \frac{x^2}{x^2 - 4} = \frac{1}{x - 2}$



## Answers

1. a)  $\frac{x-2}{2x+1}$  b)  $\frac{a}{b}$
2.  $\frac{x+3}{x-1}$
3.  $\frac{1}{3a(a+1)}$
4.  $4x^2y^3 - \frac{3}{2}xy^2 + 2y$
5.  $2x^3 - 4x + 5 + \frac{-6}{x-3}$
6.  $\frac{4x+4}{(x+7)(x-1)}$
7.  $\frac{p-10}{(p+2)^2(p-2)}$
8.  $\frac{a^2+2}{2a^2}$
9.  $x = 5$  or  $x = -\frac{6}{11}$
10.  $x = 20$
11.  $x = 9$
12.  $x = -5$
13.  $x = -3, 2$  is extraneous
14.  $w = 4$
15. 12 hours
16. flatland: 50 mph; mountain: 30 mph
17.  $a$
18.  $a$
19.  $a$
20.  $a$