

MSLC – Math 1075
Exam 2 Review

Disclaimer: This should NOT be used as your only guide for what to study.

1. Solve the equation.

a. $\frac{5}{4a+1} = 1 + \frac{3}{8a+2}$

c. $\frac{n-3}{n^2+5n+4} + \frac{n-2}{n^2+3n+2} = \frac{n^2-12}{(n+1)(n+2)(n+4)}$

2. Reduce the following rational expressions into lowest terms.

a. $\frac{6m^2}{12m^4 - 18m^3}$

b. $\frac{x^2 - 2xy + y^2}{x^2 - y^2}$

c. $\frac{ax + bx - ay - by}{9x - 9y}$

d. $\frac{(c^2 - 2cd + d^2) - w^2}{5c - 10b + 5w}$

3. Perform the indicated operations and reduce the result into lowest terms.

Assume that the variables are restricted to values that prevent division by 0.

a. $\frac{12x+16}{(x-4)^2} \cdot \frac{2x-8}{3x+4}$

b. $\frac{8x+54}{x^2-81} - \frac{2x}{x^2-81}$

c. $\frac{11}{9x^3} - \frac{2}{x^6} \div \frac{9}{x^3}$

d. $\frac{7}{x} + \frac{35}{x^2}$
 $1 - \frac{25}{x^2}$

4. Determine the domain of the following rational functions.

Give your answer in interval notation.

a. $r(x) = \frac{5x-11}{7x-14}$

b. $R(x) = \frac{x^2-16}{x^2-x-42}$

5. Solve the equations below for b .

a. $\frac{b+r}{w+1} = \frac{4}{w-5}$

b. $\frac{c}{b-3} = \frac{4}{a+5}$

6. Write an equation for each of the variation statements given:

a. A varies directly as B cubed

b. m varies directly as the square root of n and inversely as the square of p

c. y varies jointly as x and the cube root of z and inversely as the square root of w

7. Reduce each rational expression to lowest terms.

Assume that the variables are restricted to values that prevent division by 0.

a. $\frac{46x^4 - 69x^3}{23x^2}$

b. $\frac{4x^2 - 9}{9 - 6x}$

c. $\frac{x^2 - 4}{x^2 - 10x - 24}$

8. The distance required for an emergency stop for a car varies directly as the square of the speed of the car. A car travelling 50 miles per hour requires 140 feet to stop.

a. What is the constant of variation?

b. Write an equation relating the stopping distance to the speed of the car.

c. How many feet will the car need to make an emergency stop if it is travelling at 70 miles per hour?

d. How fast was the car travelling if it required 68.6 feet to make an emergency stop?

ANSWERS

1. a. $a = \frac{5}{8}$ c. $n = 1$

2. a. $\frac{1}{2m^2 - 3m}$ b. $\frac{x-y}{x+y}$ c. $\frac{a+b}{9}$ d. $\frac{(c-d-w)(c-d+w)}{5(c-2b+w)}$

3. a. $\frac{8}{x-4}$ b. $\frac{6}{x-9}$ c. $\frac{1}{x^3}$ d. $\frac{7}{x-5}$

4. a. $(-\infty, 2) \cup (2, \infty)$ b. $(-\infty, -6) \cup (-6, 7) \cup (7, \infty)$

5. a. $b = \frac{4(w+1)}{w-5} - r$ or $b = \frac{4w+4-rw+5r}{w-5}$ (*equivalent answers*)

b. $b = \frac{c(a+5)}{4} + 3$ or $b = \frac{ac+5c+12}{4}$ (*equivalent answers*)

6. a. $A = kB^3$ b. $m = \frac{k\sqrt{n}}{p^2}$ c. $y = \frac{kx\sqrt[3]{z}}{\sqrt{w}}$

7. a. $2x^2 - 3x$ b. $-\frac{2x+3}{3}$ c. $\frac{x-2}{x-12}$

8. a. $\frac{7}{125}$ or 0.056 b. $D = .056v^2$ c. 274.4 feet d. 35 mph