MAT 1033 REVIEW FOR TEST 4

This review cover sections 6.1, 6.2, 6.3, 6.4, and 6.5.

1. Simplify.

a.) $\dfrac{4-b^2}{b^2+2b}$

b.) $\dfrac{x^2+x-6}{12+x-x^2} \div \dfrac{x^2-4x+4}{x^2+x-20}$

c.) $\dfrac{48a^8b^6}{25x^4y^3} \cdot \dfrac{35x^2y^4}{36a^4b^{10}}$

d.) $\dfrac{x^2+3x-40}{x^2+2x-35} \div \dfrac{x^2+2x-48}{x^2-3x-18}$

e.) $\dfrac{x^2-7x+10}{x^2-25}$

f.) $\dfrac{4x^2-9}{6x^2+5x-6} \cdot \dfrac{6x^2-13x+6}{4x^2-12x+9}$

g.) $\dfrac{12a^4b^7}{13x^2y^2} \div \dfrac{18a^5b^6}{26xy^3}$

h.) $\dfrac{3x-4}{4x+1} + \dfrac{3x+6}{4x^2+9x+2}$

i.) $\dfrac{a^2-4}{a^2+2a}$

j.) $\dfrac{1 + \frac{3}{x} - \frac{18}{x^2}}{1 + \frac{4}{x} - \frac{21}{x^2}}$

k.) $\dfrac{2x-3}{x+5} - \dfrac{x^2-4x-19}{x^2+8x+15}$

l.) $\dfrac{x + 4 - \frac{7}{2x-5}}{2x + 7 - \frac{28}{2x-5}}$

m.) $\dfrac{5 + \frac{3}{x-8}}{2 - \frac{1}{x-8}}$

n.) $\dfrac{x+4}{x^2-x-42} - \dfrac{3}{7-x}$

o.) $\dfrac{3x+1}{x-1} - \dfrac{x-1}{x-3} + \dfrac{x+1}{x^2-4x+3}$

p.) $\dfrac{5a-2b}{6ab^2} - \dfrac{2b-3a}{8a^2b}$

q.) $\dfrac{7a-2b}{6ab^2} + \dfrac{5b+3a}{4a^2b}$

r.) $\dfrac{x^2-7x+10}{25-x^2}$

s.) $\dfrac{3 + \frac{19}{x} + \frac{20}{x^2}}{6 + \frac{5}{x} - \frac{4}{x^2}}$

2. Solve.

a.) $3 - \dfrac{a}{a-4} = \dfrac{-4}{a-4}$

b.) $\dfrac{x}{2} + \dfrac{20}{x} = 7$

c.) $5 + \dfrac{8}{a-2} = \dfrac{4a}{a-2}$

d.) $\dfrac{x}{x+2} = \dfrac{6}{x+5}$

e.) $\dfrac{4x}{x-4} + 5 = \dfrac{5x}{x-4}$

f) $x - \dfrac{6}{x-3} = \dfrac{2x}{x-3}$

g.) $\dfrac{x+3}{4} = \dfrac{x}{8}$

h.) One electrician can wire a room in 15 hours whereas a second electrician requires 30 hours to wire the same room. How long would it take to wire the room with both electricians working together?

i. A commercial jet travels 1,620 miles in the same amount of time that a corporate jet travels 1,260 miles. The rate of the commercial jet is 120 miles per hour faster than the rate of the corporate jet. Find the rate of each jet.

j. One water pipe can fill a large tank with water in 18 hours. Another pipe can fill the tank in 22 hours. How long will it take to fill the tank if both pipes are open?

k. A member of the City Volunteer Corp can mow and clean up a lawn in 9 hours. With two members of the City Volunteer Corp working, the job can be done in 6 hours. How long would it take the second member of the team, working alone, to do the job?

l. A Boeing 747 travels 2400 miles in the same amount of time as Sanco's corporate jet travels 1600 miles. The rate of the 747 is 200mph faster than the rate of the corporate jet. Find the rate of each jet.

m. Mr. Trump traveled 75 miles by car and then an additional 1400 miles by plane. The plane's speed was eight times faster than the speed of the car. The total time for the trip was 5 hours. Find the speed of the plane.

n. Three machines are filling water bottles. The machines can fill the daily quota of water bottles in 10 hours, 12 hours, and 15 hours, respectively. How long would it take to fill the daily quota of water bottles with all three machines working?

o. A painter painting a room will take 40 minutes using a new high powered paint spreader. After 15 minutes, he realizes this one paint spreader is not working fast enough and he begins using another paint spreader along with the high powered one. Twenty minutes later the paint job is finished. How long would it have taken the second paint spreader alone to have painted the room?

p. An inlet pipe can fill a water tank in 45 minutes. An outlet pipe can empty the tank in 30 minutes. How long would it take to empty a full tank with both pipes open.

ANSWERS:

1a. $\frac{2-b}{b}$ 1b. $\frac{-(x+5)}{x-2}$ 1c. $\frac{28a^4y}{15b^4x^2}$ 1d. $\frac{x+3}{x+7}$ 1e. $\frac{x-2}{x+5}$ 1f. 1 1g. $\frac{4by}{3ax}$

1h. $\frac{3x-1}{4x+1}$ 1i. $\frac{a-2}{a}$ 1j. $\frac{x+6}{x+7}$ 1k. $\frac{x+2}{x+3}$ 1l. $\frac{x-3}{2x-7}$ 1m. $\frac{5x-37}{2x-17}$

1n. $\frac{2(2x+11)}{(x-7)(x+6)}$ 1o. $\frac{2x+1}{x-1}$ 1p. $\frac{20a^2+ab-6b^2}{24a^2b^2}$ 1q. $\frac{14a^2+5ab+15b^2}{12a^2b^2}$ 1r. $\frac{-(x-2)}{x+5}$

1s. $\frac{x+5}{2x-1}$ 2a. no solution 2b. 4. 10 2c. no solution 2d. –3, 4 2e. 5 2f. –1, 6

2g. –6 2h. 10 hours 2i. 420 mph and 540 mph 2j. 9.9 hours 2k. 18 hours

2l. 400 mph and 600 mph 2m. 400 mph 2n. 4 hours 2o. 160 minutes 2p. 90 minutes