

Sample Test 6 (no word problem version)
(Chapter 6 & 7)

In problems 1 - 6, circle T for True, F for False. (2 points each)

T F (1) The rational expression $\frac{1}{x^2-4}$ is defined for all real numbers except $x=2$ and -2 .

T F (2) The GCF of $12a^4b^7$ & $42a^5b$ is $6a^4b$.

T F (3) $\frac{3-7x}{7x}$ reduces to 3.

T F (4) The expression $(2x+1)(x-3) + 3(x+5)$ is factored.

T F (5) The expressions $\frac{2x-5}{-7}$ and $\frac{2x+5}{7}$ are equivalent.

(6) Reduce: $\frac{9r^2-4s^2}{6s-9r}$ (6 points)

FACTOR EACH OF THE FOLLOWING POLYNOMIALS COMPLETELY. (4 points each)

(7) $20x^3y^7 - 15x^5y^4 + 5x^2y^4$

(8) $zw + 4z - 3w - 12$

(9) $12x^2 + 32x + 16$

(10) $81m^4 - 1$

(11) Solve: (8 points each)

(a) $3y^2 - 15y = 0$

(b) $4b(2b + 3) = 36$

(c) $\frac{z}{z^2 + z - 2} + \frac{z}{z^2 - 1} = \frac{z}{z^2 + 3z + 2}$

(12) Solve: $1 - \frac{2}{x+1} = \frac{2x}{x+1}$ (9 points)

IN PROBLEMS 13 - 17 PERFORM THE INDICATED OPERATIONS AND SIMPLIFY YOUR ANSWER.

** 7 points each **

$$(13) \frac{2}{x+1} - \frac{10}{x^2-1} + \frac{x}{x-1}$$

$$(14) \frac{7}{30a^7b^3} + \frac{1}{48ac^6}$$

$$(15) \frac{\frac{5}{x^2y} - \frac{2}{xy^2}}{\frac{3}{x^2y^2} - \frac{4}{xy}}$$

$$(16) \frac{2a^2 - 5a - 12}{a^2 + a - 20} \div \frac{4a^2 - 9}{a^2 + 4a - 5}$$

$$(17) \frac{1}{x^2-1} - \frac{x-1}{x^2+3x-4}$$

Answers:

- (1) T (2) T (3) F (4) F (5) F (6) $-\frac{3r+2s}{3}$ (7) $5x^2y^4(4xy^3 - 3x^3 + 1)$ (8) $(w+4)(z-3)$
(9) $4(3x+2)(x+2)$ (10) $(3m-1)(3m+1)(9m^2+1)$ (11) (a) $\{0,5\}$ (b) $\{-3, \frac{3}{2}\}$ (c) $\{0,-4\}$
(12) no solution (13) $\frac{x^2+3x-12}{x^2-1}$ (14) $\frac{56c^6+5a^6b^3}{240a^7b^3c^6}$ (15) $\frac{5y-2x}{3-4xy}$ (16) $\frac{a-1}{2a-3}$
(17) $\frac{-x^2+x+5}{(x+4)(x-1)(x+1)}$