BASIC ALGEBRA EXAM 3 CR Solutions

1. $\frac{30}{135} = \frac{2}{9}$

2. $\frac{2x^8y^6}{39x^4y^{16}} = \frac{2x^4}{3y^{10}}$

3. $\frac{5-x}{x^2-25} = \frac{-1(x-5)}{(x-5)(x+5)} = \frac{-1}{x+5}$

4. $\frac{15x^2+30x}{x^2+3x+2} = \frac{15x(x+2)}{(x+2)(x+1)} = \frac{15x}{x+1}$

5. $\frac{x^2-16}{x^2-3x-4} \div \frac{x^2+5x+4}{x^2-1} = \frac{(x-4)(x+4)}{(x-4)(x+1)} \cdot \frac{(x-1)(x+1)}{(x+4)(x+1)} = \frac{x-1}{x+1}$

6. $\frac{6x^2-x-7}{(6x-7)(2x+5)} \cdot \frac{2x^2+x-10}{x^2-x-2} = \frac{(6x-7)(x+1)}{(6x-7)(2x+5)} \cdot \frac{(2x+5)(x-2)}{(x-2)(x+1)} = 1$

7. $\frac{1}{12}, \frac{1}{20}$

$\frac{1}{2^2\cdot 3}, \frac{1}{2^2\cdot 5}$

LCD $= 2^2\cdot 3\cdot 5 = 60$

8. $\frac{1}{36x^7}, \frac{1}{8x^3y^2}$

$\frac{1}{2^2\cdot 3^2 x^7}, \frac{1}{2^3 x^3 y^2}$

LCD $= 2^3\cdot 3^2 x^7 y^2 = 72x^7y^2$

9. $\frac{1}{x^2-5x+6}, \frac{1}{x^2-6x+9}$

$\frac{1}{(x-2)(x-3)}, \frac{1}{(x-3)^2}$

LCD $= (x-2)(x-3)^2$

10. $\frac{7}{12} + \frac{3}{20}$

LCD $= 60$

$\frac{7\cdot 5}{12\cdot 5} + \frac{3\cdot 3}{20\cdot 3}$

$= \frac{35+9}{60}$

$= \frac{44}{60}$ or $\frac{11}{15}$

11. $\frac{3}{2x} - \frac{7}{5y}$ LCD $= 10xy$

$= \frac{15y-14x}{10xy}$

12. $\frac{3}{4x^2} + \frac{5\cdot 2x}{2x\cdot 2x}$ LCD $= 4x^2$

$\frac{3+10x}{4x^2}$

13. $\frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2}$

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

$= \frac{x^2+4x+4}{x+2}$

$= \frac{(x+2)^2}{x+2} = x+2$

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

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

$= \frac{5x+15+3x-6}{(x-3)(x-2)(x+3)}$

$= \frac{8x+9}{(x-3)(x-2)(x+3)}$

15. $\frac{x^2}{3(x-3)} - \frac{3\cdot 3}{(x-3)\cdot 3}$

$= \frac{x^2-9}{3(x-3)}$

$= \frac{(x-3)(x+3)}{3(x-3)}$

$= \frac{x+3}{3}$

16. $\frac{7}{x(x-3)} + \frac{4\cdot x}{x-3\cdot x}$

$= \frac{7+4x}{x(x-3)}$

17. $\frac{4}{x-2} = \frac{5}{x+3}$

$4x-12 = 5x+10$

$-4x \quad -10 \quad -4x \quad -10$

$-22 = x$

18. $\frac{3}{x-4} = \frac{8}{3x-12}$

$3(3x-12) = 8(x-4)$

$9x-36 = 8x-32$

$-8x+36 \quad -8x+36$

$x = 4$ No Sol.

Reject

19. $\frac{4}{x} = \frac{x-2}{2}$

$x(x-2) = 8$

$x^2-2x-8 = 0$

$(x-4)(x+2) = 0$

$x = 4 \quad x = -2$

20. $\frac{(x+1)}{3}\cdot\frac{36}{1} + \frac{(x-2)}{2}\cdot\frac{6}{1} = \frac{6}{1}$

$2x+2+3x-6 = 36$

$5x-4 = 36$

$5x = 40$

$x = 8$

Check: $\frac{8+1}{3} + \frac{8-2}{2} = 6$

$\frac{9}{3} + \frac{6}{2} = 6$

$3+3 = 6$ ✓

21. $ax+b = c$

$-b \quad -b$

$ax = c-b$

$x = \frac{c-b}{a}$

22. $ax+bx = c$

$x(a+b) = c$

$x = \frac{c}{a+b}$

BASIC ALGEBRA EXAM 3 CR NAME

Show all work on this test. Turn in all work sheets.
CALCULATORS.

#1-4, Reduce completely:

1. $\frac{30}{135} =$

2. $\frac{26x^8y^6}{39x^4y^{16}} =$

3. $\frac{5-x}{x^2-25} =$

4. $\frac{15x^2+30x}{x^2+3x+2} =$

5. $\frac{x^2-16}{x^2-3x-4} \div \frac{x^2+5x+4}{x^2-1} =$

6. $\frac{6x^2-x-7}{(6x-7)(2x+5)} \cdot \frac{2x^2+x-10}{x^2-x-2} =$

#7-9, find the LCD only:

7. $\frac{1}{12}, \frac{1}{20}$

8. $\frac{1}{36x^7}, \frac{1}{8x^3y^2}$

9. $\frac{1}{x^2-5x+6}, \frac{1}{x^2-6x+9}$

10. Add: $\frac{7}{12} + \frac{3}{20}$

11. Subtr: $\frac{3}{2x} - \frac{7}{5y}$

12. Add: $\frac{3}{4x^2} + \frac{5}{2x}$

Perform the indicated operations: EXAM 3 CR p. 2.

13. $\frac{3x^2+4x}{x+2} - \frac{2x^2-4}{x+2}$

14. $\frac{5}{x^2-5x+6} + \frac{3}{x^2-9}$

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

16. $\frac{7}{x^2-3x} + \frac{4}{x-3}$

17. Solve for x: $\frac{4}{x+2} = \frac{5}{x-3}$

In 18–22, solve for x

18. $\frac{3}{x-4} = \frac{8}{3x-12}$

19. $\frac{4}{x} = \frac{x-2}{2}$

20. $\frac{x+1}{3} + \frac{x-2}{2} = 6$

21. $ax+b=c$

22. $ax+bx=c$