Practice Problems RHS
Algebra 2

1. The expression $x^2(x+2)-(x+2)$ is equivalent to

1) x^2
2) x^2-1
3) x^3+2x^2-x+2
4) $(x+1)(x-1)(x+2)$

2. When factored completely, $x^3+3x^2-4x-12$ equals

1) $(x+2)(x-2)(x-3)$
2) $(x+2)(x-2)(x+3)$
3) $(x^2-4)(x+3)$
4) $(x^2-4)(x-3)$

3. Factor: $a^2-3ab-a+3b$

4. Factored completely, the expression $12x^4+10x^3-12x^2$ is equivalent to

1) $x^2(4x+6)(3x-2)$
2) $2(2x^2+3x)(3x^2-2x)$
3) $2x^2(2x-3)(3x+2)$
4) $2x^2(2x+3)(3x-2)$

5. Factor: $3a^2+a-2$

6. Factor: $10x^2+11x-6$

7. Factor: $12a^2+14a-6$

8. Factor: $16x^2 - 9$

9. Factor: $a^4 - 16$

10. Express in simplest form: $\dfrac{36 - x^2}{x^2 + 8x + 12} \div \dfrac{x^2 - 6x}{x - 2}$

11. Perform the indicated operation and express in *simplest form*:

$$\frac{x^2 - 3x}{2x^2 + x - 6} \div \frac{x^2 - 5x + 6}{x^2 - 4}$$

12. Perform the indicated operations and express in lowest terms:

$$\frac{x^2 - 9}{2x + 4} \cdot \frac{x^2 + 7x + 10}{x^2 - 3x - 18} \div \frac{x^2 + 2x - 15}{2x^2 - 12x}$$

13. Express in simplest form: $\dfrac{x^2 - 16}{2x^2 + 4x} \cdot \dfrac{x^2 + 9x + 14}{x^2 + 2x - 8} \div \dfrac{x^2 + 3x - 28}{16x - 8x^2}$

14. Perform the indicated operations and simplify: $\frac{x^2+4xy+3y^2}{x^2-y^2} \cdot \frac{x^2+xy}{x-y} \div \frac{x^2+3xy}{(x-y)^2}$

15. Expressed as a single fraction, $\frac{3}{x-1} - \frac{2}{x}$ is equivalent to

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

16. Expressed as a single fraction, $\frac{5}{x-3} - \frac{1}{x}$ is equivalent to

1) $\frac{6x-3}{x^2-3x}$
2) $\frac{4x+3}{x^2-3x}$
3) $\frac{4x+3}{2x-3}$
4) $\frac{4}{x^2-3x}$

17. The expression $\frac{6}{y-5} - \frac{y+5}{y^2-25}$ is equivalent to

1) $\frac{5}{y-5}$
2) $\frac{5}{y+5}$
3) $\frac{5y}{y-5}$
4) $\frac{5y}{y+5}$

18. The expression $\frac{x}{x-1} + \frac{x}{x+1}$ is equivalent to

1) 1
2) $\frac{2x}{x^2-1}$
3) –2
4) $\frac{2x^2}{x^2-1}$

19. Express in simplest form: $\frac{3x}{2x-6}+\frac{9}{6-2x}$

20. Express in simplest form: $\frac{3a+1}{a^2-1}-\frac{1}{a+1}$

21. Simplify: $\left(\frac{a+2b}{2a+b}-\frac{a-2b}{2a-b}\right)\left(\frac{1}{b}+\frac{b}{2ab}\right)$

22. Reduce to simplest form: $\left(\frac{x}{x-y}-\frac{y}{x+y}\right)\div\frac{x^2+y^2}{x^2+xy}$