

Northwest-Shoals Community College
Math, Science and Technology Division
MTH 100 Practice for Exam 3

You may write on the test. If you choose to check your answers, please do this on “scratch” paper.

Polynomial Functions:

1. Given $f(x) = -3x + 7$ and $g(x) = 8x^3 - x^2 + 1$,
find $(f - g)(2)$

2. The polynomial $7r^2 - 2r + 6$ describes the voltage in a circuit where r represents the resistance in the circuit.
 - a. Find the voltage if the resistance is 6 ohms.
 - b. Find the voltage if the resistance is 8 ohms.

Polynomial Division (use synthetic division, if possible):

3. Divide $\frac{14y^2 - 8y + 17}{7y + 3}$

4. Divide $\frac{z^3 - z^2 + 3 - 11z}{z + 2}$

Factor Completely:

5. $3x^3 - 6x^2 + 9x$
6. $g^3 + 64$
7. $2x^3y - 54yz^3$
8. $3t^2 + 2t + 1$
9. $z^2 - 49$
10. $a^2 - 24b^2 - 5ab$
11. $2q^2 - 13q - 24$
12. $(s + t)^2 - 2(s + t) + 1$
13. $16c^4 - 1$
14. $-x^2 - 3x + 28$
15. $xy + 2y + 4x + 8$

Rational Expressions:

16. Find the domain of the expression: $\frac{2q}{q-9}$

17. Simplify: $\frac{w^2 - 16}{8 - 2w}$

18. Divide: $\frac{(x^3 - 8)}{x - 1} \div \frac{x^2 + 2x + 4}{3x^2 - 3x}$

19. Subtract: $\frac{x + 2}{x + 5} - \frac{x - 3}{x + 7}$

20. Simplify: $\frac{a^{-2} + b^{-1}}{a^{-1} - 5b^{-3}}$

Solve the Equations:

21. $x(x - 5) = -6$

22. $6y^2 - 5y = 4 - 28y$

23. $\frac{5}{x - 3} = \frac{x}{x - 2} + \frac{x}{x^2 - 5x + 6}$

24. $\frac{1}{2} = \frac{-3}{q + 5}$

25. $3 + \frac{9 - 2x}{8x} = \frac{5}{2x}$