MTH-100 Review for Test 1 Luczak

SHOW ALL WORK. If no or insufficient work is shown then no credit will be given. Give answers in exact form only, NO DECIMAL APPROXIMATIONS!

1. Simplify, leave no negative exponents: $\dfrac{\left(5xy^5z^{-3}\right)^2}{\left(2x^6yz^{-3}\right)^{-1}}$

2. Simplify, leave no negative exponents: $\left(\dfrac{2x^{-1}y^5z^4}{3x^4y^{-2}z^{-2}}\right)^{-2}$

3. Write in scientific notation: a) 4,320,000,000 b) 0.000536

4. Perform the indicated operation, leave answer in scientific notation:

a) $\left(25\times10^{-3}\right)\left(1.2\times10^{6}\right)$ b) $\dfrac{2.1\times10^{-5}}{7\times10^{3}}$

5. Simplify: $\left(37x^2y-5x^2\right)-\left(x^4-14x^2+4x^2y\right)$

6. Multiply:

a) $\left(5x^2-3\right)^2$ b) $\left(x^2+3x-2\right)\left(-2x^2+4x+3\right)$ c) $\left(2x^2y^5\right)\left(-4xy^4z\right)$

7. Factor, if possible:

a) $18x^3y+10xy^5$ b) $4a\left(7x+8\right)^4-\left(7x+8\right)^3$ c) $4x^3+12x^2-16x-48$

d) $x^2-10x-39$ e) $12x^2+23x+10$ f) $8x^2+30x-9$

8. Which of these is not equal to the others

a) $-\dfrac{3x-5}{7}$ b) $\dfrac{3x-5}{-7}$ c) $\dfrac{-3x-5}{7}$ d) $\dfrac{-3x+5}{7}$ Explain your answer.

Perform the indicated operations. Leave answers in simplest form.

9. $\dfrac{8x-12x^2}{9x^2+24x+16}\cdot\dfrac{9x^2+18x+8}{9x^2-4}$

10. $\dfrac{x^2+9x+18}{x^2+10x+24}\bullet\dfrac{x^2+4x}{x^2-5x-24}$

11. $\dfrac{x^2-5x+4}{x^2+4}\div\dfrac{x^2+3x-4}{x+2}$

12. $\dfrac{x^2-9}{4x+12}\div\dfrac{5x^2-30x+45}{x^2+6x+9}$

13. $\dfrac{2}{15x^3y} - \dfrac{1}{18xy^2}$

14. $\dfrac{x-2}{x^2+7x+6} - \dfrac{4x+5}{x^2+3x-18}$

15. $\dfrac{x}{x^2-16} - \dfrac{8}{x^2+5x+4}$

16. Simplify the compound fraction. Leave answer in simplest form.

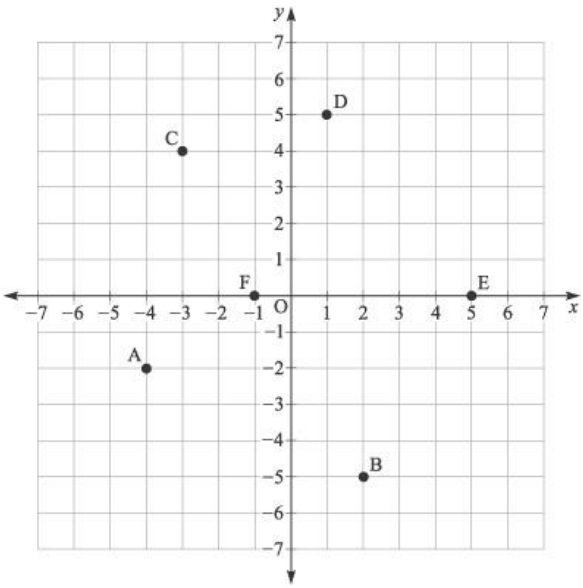
a) $\dfrac{4+\frac{2}{x}}{\frac{x}{3}+\frac{1}{6}}$ b) $\dfrac{\frac{1}{x+h}-\frac{1}{x}}{h}$ c) $\dfrac{\frac{4}{x}+\frac{9}{x^2}}{\frac{16}{x^2}-\frac{81}{x}}$

17. Solve the following inequalities. Express the solution set in interval notation and graph it.

a) $-15x-9 \le -3(4x-2)$ b) $-2 \le \dfrac{4-3x}{5} < 8$ c) $5+\left|\dfrac{2-x}{2}\right| > 8$ d) $\left|1-\dfrac{1}{6}x\right| < \dfrac{1}{2}$

18. Solve: a) $4\left|1-\dfrac{3}{4}x\right|+7=10$ b) $4-3|x-2|=-8$ c) $|3x+5|+4=3$

19. Give the ordered pairs for each point

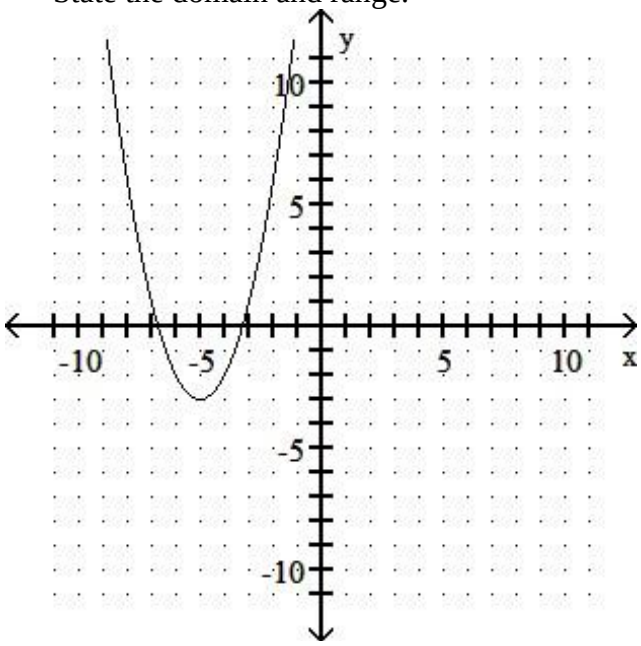


20. Determine if the relation represents a function, and then state the domain and range:

a) $\{(11,-2),(-5,-1),(-5,0),(-4,1),(4,3)\}$

b) $\{(-3,14),(-2,9),(0,5),(2,9),(4,21)\}$

21. Use the vertical line test to determine if the graph represents y as a function of x. State the domain and range.



22. Given the function $f(x)=\dfrac{x^3-1}{x^2+2}$ find the following:

a) $f(1)$ b) $f(0)$ c) $f(-2)$ d) $f(a)$ e) $f(x+h)$