Math 010 Practice Problems for Test 1 Fall 2022

The following are examples of potential exam questions. It is recommended that you show all work while doing these problems. No problem requires a calculator but you are welcome to use one.

1. No work necessary for this one problem. "Basic" computation
   (a) Compute $2 + 5$
   (b) Compute $7 - 3$
   (c) Compute $-2 + 6$
   (d) Compute $1 - (-4)$
   (e) Compute $3 \cdot (-2)$
   (f) Compute $(-1) \cdot (-5)$
   (g) Compute $-6 \div 3$
   (h) Compute $-8 \div (-4)$
2. Simplify by factor trees
   (a) Simplify the fraction: $\frac{3}{9}$
   (b) Simplify the fraction: $\frac{100}{180}$
   (c) Simplify the fraction: $\frac{336}{392}$
3. Computing with common denominators
   (a) Compute and simplify $\frac{1}{2} + \frac{1}{2}$
   (b) Compute and simplify $\frac{3}{5} - \frac{2}{5}$
   (c) Compute and simplify $\frac{5}{4} - \frac{3}{4}$
   (d) Compute and simplify $\frac{1}{6} - (-\frac{1}{6})$
4. Computing with uncommon denominators
   (a) Compute and simplify $\frac{1}{2} + \frac{1}{3}$
   (b) Compute and simplify $\frac{3}{4} - \frac{2}{5}$
   (c) Compute and simplify $\frac{5}{2} - \frac{3}{4}$
   (d) Compute and simplify $\frac{1}{6} - (-\frac{1}{2})$
5. Computing with mult and div
   (a) Compute and simplify $\frac{1}{2} \cdot \frac{2}{3}$
   (b) Compute and simplify $\frac{1}{2} \cdot (-\frac{3}{4})$

(c) Compute and simplify $\frac{1}{6} \div \frac{3}{4}$

(d) Compute and simplify $\frac{1}{2} \div (-\frac{6}{7})$

6. Compound fractions

(a) Compute and simplify $\frac{\frac{1}{3}+\frac{2}{3}}{\frac{1}{2}-\frac{5}{2}}$

(b) Compute and simplify $\frac{\frac{1}{2}\cdot\frac{2}{3}}{\frac{1}{2}+\frac{1}{3}}$

(c) Compute and simplify $\frac{\frac{1}{3}+\frac{3}{9}}{\frac{1}{2}-\frac{3}{4}}$

(d) Compute and simplify $\frac{\frac{1}{2}+\frac{2}{7}}{\frac{1}{5}+\frac{3}{2}}$

7. Solve linear equations.

(a) Solve for x: $x + 3 = 5$

(b) Solve for x: $2x - 3 = 5$

(c) Solve for x: $\frac{1}{2}x + 4 = 5$

(d) Solve for x: $3x - 2x + 3 = 5 - 2$

(e) Solve for x: $14 - 20 = 12x - x - 5x$

(f) Solve for x: $-4(x - 3) - 5 = 27$

(g) Solve for x: $4x - 2 = 2x + 8$

8. Solving and interpreting inequalities

(a) Solve the inequality, graph the solution, and write the solution in interval notation: $x + 3 < 5$

(b) Solve the inequality, graph the solution, and write the solution in interval notation: $2x - 3 \geq 5$

(c) Solve the inequality, graph the solution, and write the solution in interval notation: $\frac{1}{2}x + 4 > 5$

(d) Solve the inequality, graph the solution, and write the solution in interval notation: $6x \leq 11x + 15$

9. Compute with exponents

(a) Compute and simplify 2^3

(b) Compute and simplify $3^2 + 2^3$

(c) Compute and simplify 1^{999}

(d) Compute and simplify $72^1 + 2^2$

(e) Compute and simplify $9^{99999} \cdot 9^{-100000}$

(f) Simplify $(2x)^2 - 4x^2$

10. Compute with radicals

(a) Compute $\sqrt{4}$

(b) Compute $\sqrt{16}$

(c) Compute $\sqrt[3]{8}$

(d) Compute $\sqrt[999]{3^{999}}$

(e) Simplify $\sqrt{16a^2}$

(f) Simplify $\sqrt{a^4}$

(g) Simplify $\sqrt[3]{27a^9}$