

Instructions: These problems are for you to use to test yourself, **after** you have practiced with the routine homework assignments, to see how ready you are for Test 1. They are not meant as a substitute for regular and diligent practice! Do the following problems as if you were taking a test: without notes or textbook, and give yourself a time limit as stated at the start of each self-test. At the end of that time, check your answers: answers will be provided on the OpenLab blog and/or on Piazza, along with links and references to the sections of the textbook to review. Then review as needed before you do the next self-test.

Self-Test 1: allow 50 minutes

Part A: Simplify each expression completely, writing your answer with only positive exponents.

1) $\frac{-26x^{-2}2y^3}{39x^4y^2}$

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

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

Part B: perform the indicated operation and express answers in simplest form.

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

5) $\frac{3}{n^2-5n-36} + \frac{2}{n^2+3n-4}$

Part C: Solve each equation:

6) $\frac{4x+5}{3} + \frac{2x-1}{5} = 2$

7) $\frac{a}{a-2} - \frac{3}{2} = \frac{2}{a-2}$

Part D: Simplify completely:

8) $\sqrt[9]{-1} + \sqrt[37]{0} + \sqrt[4]{1}$

9) $\sqrt{50x^3y^{16}}$

10) $\sqrt[3]{\frac{a^9}{27b^3}}$

Self-Test 2: allow 50 minutes

Part A: Simplify each expression completely, writing your answer with only positive exponents.

1) $\frac{\frac{5}{8} - \frac{1}{2}}{\frac{1}{6} + \frac{3}{4}}$

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

3) $\left(\frac{a^3b^{-2}c}{a^2b^4c^{-3}}\right)^{-1}$

Part B: perform the indicated operation and express answers in simplest form.

4) $\frac{3}{2n} + \frac{5}{3n} - \frac{1}{9}$

5) $\frac{2}{y^2+4y+3} - \frac{1}{y^2+5y+6}$

Part C: Solve each equation:

6) $\frac{3}{4x} + \frac{4}{5} = \frac{9}{10x}$

7) $\frac{1}{2x-7} + \frac{x-5}{4x^2-49} = \frac{4}{6x-21}$

8) $\frac{x}{x+6} = \frac{72}{x^2-36} + 4$

Part D: Simplify completely:

9) $-27^{4/3}$

10) $(-27)^{4/3}$