

**Math 140 - Homework 1**

Name: \_\_\_\_\_

Due by 5:00pm Monday, February 22. Send a PDF with your solutions to [blins@hsc.edu](mailto:blins@hsc.edu).

Simplify each of the following expressions to a single reduced fraction. Show your work. No calculators.

1.  $\frac{a}{b} + \frac{b}{2}$

2.  $\frac{1}{2} - \frac{7}{3}$

3.  $4\left(\frac{5}{6}\right)$

4.  $\frac{\left(\frac{8}{7}\right)}{4}$

5.  $\left(\frac{3}{4}\right)\left(\frac{-20}{9}\right)$

6.  $\frac{(4/21)(9/8)}{2}$

7.  $\frac{(-1/3)(-6)}{(-4/7)}$

8.  $\left(\frac{15}{8}\right)\left(\frac{44}{25}\right)$

9.  $(0.00024)(0.05)$

10.  $\frac{0.0035}{0.7}$

11.  $\frac{6}{1 - \frac{1}{5}}$

12.  $\frac{0.55}{1 - 0.01}$

Simplify the following products by expanding. As always, show your work.

13.  $(x + y - 2z)(-3x)$

14.  $\frac{1}{3}(a - b)(3a + 3b)$

15.  $(a + b)(a^2 - ab + b^2)$

Factor the following expressions as completely as you can.

16.  $-15ab + 6ac$

17.  $12xy^2 - 24x^2y$

18.  $4x^2(x - 1) - 12x(x - 1)$

Solve the equations below for  $x$  using factoring and/or distribution.

19.  $8(x + 5) + 2(x + 3) = 6$

20.  $4x - 2xy = 2$

21.  $Ax + \frac{x}{B} = 1$

Simplify by factoring.

22.  $\frac{5x - 10y}{5} + \frac{4x + 8y}{x + 2y}$

23.  $\frac{(4x^2 - x)(3x - 3)}{(x - 1)(4x - 1)}$

24.  $x^2 + 8x + 16$

25.  $\frac{x^2 - 9x + 20}{x^2 + x - 20}$

26.  $\frac{\frac{x^2 + 4x - 5}{3x + 12}}{\frac{x + 5}{3}}$

27.  $\left(\frac{4x + 12}{x^2 - 5x + 6}\right) \left(\frac{x^2 - 3x + 2}{x + 3}\right)$