Mathematics 101 Worksheet 1.8, 2.1, 2.2

Problems

1) Simplify the expression and write the answer with positive exponents.
   a) \((-6x^4)(3x^2)\)
   
   b) \(\frac{24x^5y^3}{-8x^3y}\)
   
   c) \((-2a^2b^{-5})^{-3}\)

2) Write the numbers in scientific notation.
   a) The population of Asia is 3,686,600,000 in 2000.
   b) A nanometer is 0.000001 of a millimeter.

3) For the following, find the x-intercept, the y-intercept, the slope, and graph the equation.
   a) \(2x - 3y = -6\)
   b) \(5x - 2y = 0\)
   c) \(y = 6\)
   d) \(x = 2\)

4) Find the slope of the line that passes through \((7, 2)\) and \((-3, -5)\).

5) The slopes of two lines are given. Based on the slopes, are the lines parallel, perpendicular, or neither?
   a) \(m_1 = -\frac{1}{3}, m_2 = 3\)
   b) \(m_1 = \frac{5}{4}, m_2 = \frac{4}{5}\)
   c) \(m_1 = \frac{1}{2}, m_2 = \frac{1}{2}\)