P1 - The Real Numbers and Their Properties

Review problems

1. **Order of operations and operations on integers.** Evaluate the following. Do not use calculators.

   (a) $5 - 3(6 - 8)^2$ (b) $-2^3 - (-4)^2$

2. **Operations on fractions.** Evaluate the following and simplify. Do not use calculators:

   (a) $\dfrac{3}{4} - \dfrac{2}{3}$ (b) $\dfrac{3}{4} \cdot \dfrac{2}{3}$ (c) $2 - \dfrac{5}{9} \cdot \dfrac{12}{5}$ (d) $2 - \dfrac{5}{9} \cdot \dfrac{2}{5}$

Basic knowledge

3. Given that $x = 2, y = -3$ evaluate the following:

   (a) $\dfrac{x - 2(y + 1)}{x - y}$ (b) $y - \dfrac{y}{3x - 2y}$

4. Graph the following intervals on a number line:

   (a) $[-3, 8)$ (b) $(-\infty, \frac{1}{2}]$ (c) $-\frac{3}{5}, -\frac{1}{4}$

Intermediate/Advanced

5. Given that $x = \frac{2}{3}, y = -\frac{1}{2}$ evaluate the following:

   (a) $\dfrac{x - 2(y + 1)}{x - y}$ (b) $\dfrac{\frac{1}{x} + y}{2y - 1} - \dfrac{\frac{y+1}{x-1}}{3x - 2y}$