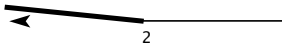
# SelfTest: On the Chapter P Quiz you will be asked to...

1. Express number sets using interval notation, graphs, and inequalities.

   a) Express the interval $[2,\infty)$ as an inequality, and then as a number line graph.

   b) Express $\{x \mid -2 < x \le 5\}$ using interval notation and then as a graph.

   c) Express  using interval notation and as an inequality.

   d) Express $[-4, 0)$ as an inequality and a graph.

   e) Express $\{x \mid x \le -1\}$ using interval notation and then as a graph.

2. Find the intersection & union of two sets of numbers. Express answers using interval notation.

   Find i) $A \cap B$ ... and ii) $A \cup B$ ... for each of the following pairs of sets

   a) $A = \{x \mid x < 3\}$ and $B = \{x \mid -2 < x < 5\}$

   b) $A = [-1, 6)$ and $B = [5, 8]$

   c) $A = \{x \mid x \le 0\}$ and $B = \{x \mid x < -3\}$

   d) $A = (-\infty, 2]$ and $B = [2, \infty)$

   e) $A = [-1, \infty)$ and $B = (1, 3]$

3. Simplify expressions, with rational exponents, as much as possible (eliminate negative exponents).

   a) $(2x^4 y^{-4/5})^3 (8y^2)^{2/3}$ b) $(27x^9)^{-4/3}$ c) $\dfrac{(y^9 z^{-3})^{1/3}}{(y^{-4} z^2)^{1/4}}$

   d) $\dfrac{(9st)^{3/2}}{(27s^3 t^{-4})^{2/3}}$ e) $\dfrac{3x^{1/2} y^3}{x^2 y^{-1/2}}$

4. Factor an expression involving rational exponents. EG: Factor completely:

   a) $x^{-3/2} + 2x^{-1/2} + x^{1/2}$ b) $x^{-1/2}(x+1)^{1/2} + x^{1/2}(x+1)^{-1/2}$

   c) $4x^{-1/2} + 5x^{1/2} + x^{3/2}$ d) $3(1+x)^{1/3} - x(1+x)^{-2/3}$ e) $3x^{3/2} - 9x^{1/2} + 6x^{-1/2}$

   f) $x^2 - 64$ g) $x^3 - 64$

5. Simplify a complex rational expression. EG: Simplify completely:

   a) $\dfrac{\frac{1}{t+h} - \frac{1}{t}}{h}$ b) $\dfrac{1}{1 + a^n} + \dfrac{1}{1 + a^{-n}}$ c) $x^2 - \dfrac{y^2}{\frac{1}{x^2} + \frac{1}{y^2}}$

   d) $\dfrac{1 + \frac{2}{c-2}}{1 - \frac{2}{c-2}}$ e) $\dfrac{\frac{y}{x} - \frac{x}{y}}{\frac{1}{y} - \frac{1}{x}}$