

More problems for section 1.1 of *Essentials of Precalculus with Calculus Previews* by Zill and Dewar, 5e.

1. Solve for  $x$ . Write the solution set in interval form.

- a.  $(x - 5)(x + 2)(x + 1) \geq 0$       b.  $\frac{(x - 5)(x + 2)}{x + 1} \geq 0$       c.  $\frac{x^2 + x - 6}{4 - x} \leq 0$
- d.  $\frac{3 - x}{x^2 - 6x + 8} \geq 0$       e.  $\frac{(4 - x)(x - 3)}{(x + 1)^2} \leq 0$       f.  $\frac{x^2 - 3x - 4}{x^2 - 6x + 9} < 0$
- g.  $(x + 2)^2(x + 1)^2(3 - x) \leq 0$       h.  $\frac{1}{x - 2} < \frac{1}{x + 3}$       i.  $\frac{x + 1}{x - 2} \geq 2$
- j.  $\frac{1}{x + 4} \leq \frac{1}{1 - x}$       k.  $\frac{1}{4 - x} \geq \frac{1}{2 + x}$       l.  $\frac{1}{x - 3} > \frac{2}{x + 5}$
- m.  $\frac{1}{x - 5} \geq \frac{1}{2x + 1}$       n.  $\frac{2}{x + 3} \leq 3$

Answers

- 1a.  $[-2, -1] \cup [5, \infty)$     1b.  $[-2, -1) \cup [5, \infty)$     1c.  $[-3, 2] \cup (4, \infty)$     1d.  $(-\infty, 2) \cup [3, 4)$     1e.  $(-\infty, -1) \cup (-1, 3] \cup [4, \infty)$     1f.  $(-1, 3) \cup (3, 4)$   
1g.  $\{-2\} \cup \{-1\} \cup [3, \infty)$  This can also be written as  $\{-2, -1\} \cup [3, \infty)$  or as  $\{-1, -2\} \cup [3, \infty)$ .    1h.  $(-3, 2)$     1i.  $(2, 5]$   
1j.  $(-\infty, -4) \cup [-3/2, 1)$     1k.  $(-\infty, -2) \cup [1, 4)$     1l.  $(-\infty, -5) \cup (3, 11)$     1m.  $[-6, -1/2) \cup (5, \infty)$     1n.  $(-\infty, -3) \cup [-7/3, \infty)$