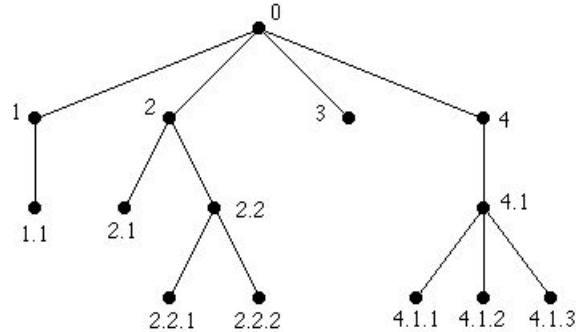**Extra Examples** — *Page references correspond to locations of Extra Examples icons in the textbook.*

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p.773, icon at Example 1
#1. Write in lexicographic ordering the universal address system labels for the following tree.
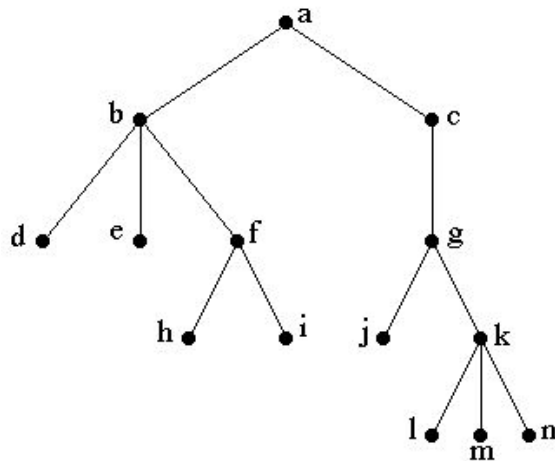

Solution:

$0 < 1 < 1.1 < 2 < 2.1 < 2.2 < 2.2.1 < 2.2.2 < 3 < 4 < 4.1 < 4.1.1 < 4.1.2 < 4.1.3$.

---

p.773, icon at Example 2
#1. Use a preorder traversal to list the vertices of the following tree.
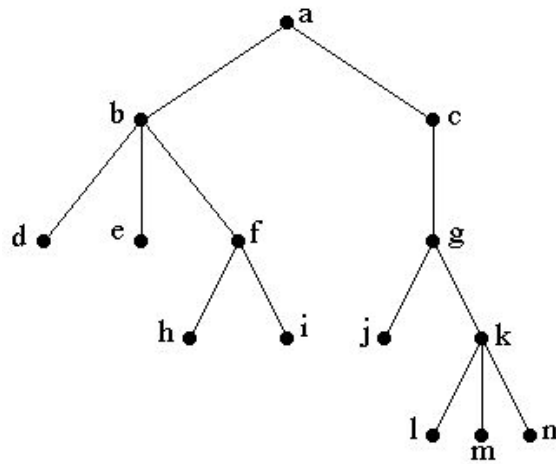

Solution:

The preorder traversal is $a, b, d, e, f, h, i, c, g, j, k, l, m, n$.

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p.775, icon at Example 3

#1. Use an inorder traversal to list the vertices of the following tree.
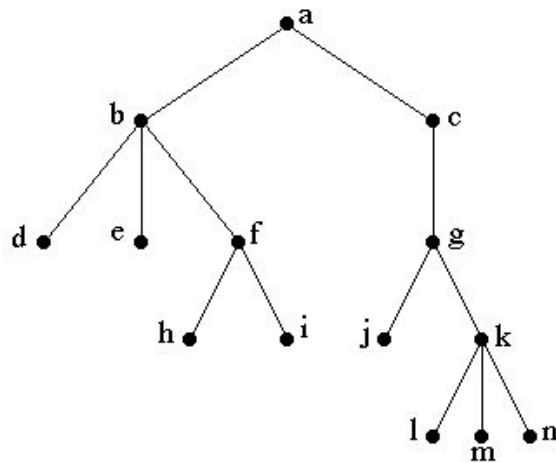

Solution:

The inorder traversal is $d, b, e, h, f, i, a, j, g, l, k, m, n, c$.

---

p.777, icon at Example 4

#1. Use a postorder traversal to list the vertices of the following tree.

Solution:

The postorder traversal is $d, e, h, i, f, b, j, l, m, n, k, g, c, a$.

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p.782, icon at Example 10

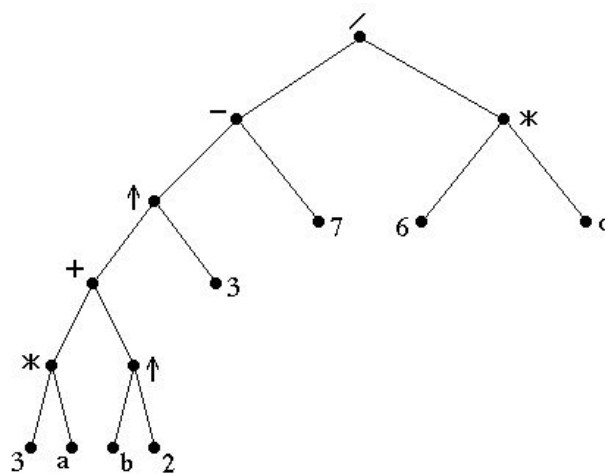**#1.** Write the algebraic expression $\dfrac{(3a + b^2)^3 - 7}{6c}$ in

(a) prefix notation.

(b) postfix notation.

(c) infix notation.

Solution:

The parsing tree for this expression is

From this we obtain:

(a) prefix notation: $/ \ - \ \uparrow \ + \ * \ 3 \ a \ \uparrow \ b \ 2 \ 3 \ 7 \ * \ 6 \ 3$

(b) postfix notation: $3 \ a \ * \ b \ 2 \ \uparrow \ + \ 3 \ \uparrow \ 7 \ - \ 6 \ c \ * \ /$

(c) infix notation: $3 \ * \ a \ + \ b \ \uparrow \ 2 \ \uparrow \ 3 \ - \ 7 \ / \ 6 \ * \ 3$

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p.782, icon at Example 10
#2. Write the logic expression $\neg r \rightarrow (p \vee \neg(q \wedge \neg s))$ in prefix, postfix, and infix notation.

Solution:

The following is the parsing tree for the logic expression:

3

prefix notation: → ¬ r ∨ p ¬ ∧ q ¬ s.

postfix notation: r ¬ p q s ¬ ∧ ¬ ∨ →.

infix notation: r ¬ → p ∨ q ∧ s ¬ ¬.