1. All strings of lowercase letters that begin and end in a
a([a-z]*a)?

2. All strings of lowercase letters that either begin or end in a (or both)
a[a-z]* | [a-z]*a

3. All strings of digits that contain no leading zeroes
nonzero = [1-9]
digit = 0 | nonzero
answer = 0 | nonzero digit*

4. All strings of digits that represent even numbers
even = 0 | 2 | 4 | 6 | 8
answer = even | [1-9] [0-9]* even

5. All strings of digits such that all the 2's occur before all the 9's
non9 = [0-8]
non2 = [013-9]
answer = non9* non2*

6. All strings of a's and b's that contain no three consecutive b's
(a | ba | bba) * (b | bb)?

7. All strings of a's and b's that contain an odd number of a's or an odd number of b's (or both)
b* ab* (ab*ab*)* | a* ba* (ba*ba*)*

8. All strings of a's and b's that contain an even number of a's and an even number of b's
(aa | bb)* ((ab|ba)(aa | bb)* (ab|ba)(aa | bb)*)*

9. All strings of a's and b's that contain an even number of a's and an odd number of b's
even_a_even_b = (aa | bb)* ((ab|ba)(aa | bb)* (ab|ba)(aa | bb)*)*
even_a_odd_b = b even_a_even_b | a (aa | bb)* (ab|ba) even_a_even_b

10. All strings that contain exectly as many a's and b's

11. Comments, consisting of a string surrounded by /* and */, without an intervening */.
#

other1 = [^#]
other2 = [^#/]
answer = /# other1* (# #* other2 other*)* #* #/

12. All strings of digits with no repeated digits. Hint: Try this problem first with a few digits, such as {0; 1; 2}
zero = 0

one = zero (1 zero)* | (zero 1)+ | 1 (zero 1)* | (1 zero)+

two = one (2 one)* | (one 2)+ | 2 (one 2)* | (2 one)+

three = two (3 two)* | (two 3)+ | 3 (two 3)* | (3 two)+

four = three (4 three)* | (three 4)+ | 4 (three 4)* | (4 three)+

...

nine = eight (9 eight)* | (eight 9)+ | 9 (eight 9)* | (9 eight)+

13. All strings of digits with at most one repeated digit.