1. x = none, y = am, z = bm   
We should be able to pump y as much as we want, and the string should still be accepted.

Assume m = 8, then xyz = a8b8, this is an accepted string. Therefore xy2z should also be accepted, however, xy2z = a16b8, this is not an accepted string. Therefore this language is not regular.

2. x = none, y = (a + b)\*, z = none  
We should be able to pump y as much as we want, and the string should still be accepted.

Assume na = 1, and nb = 2 then xyz = abb | bab | bba , this is an accepted string. Therefore xy2z should also be accepted, however, xy2z = abbabb | babbab| bbabba, this is not an accepted string because the na = 1, and nb = 2 no longer holds true. Therefore this language is not regular.

3. x = none, y = am, z = bn

We should be able to pump y as much as we want, and the string should still be accepted.

Assume m = 2, n = 1 then xyz = aab, this is an accepted string. Therefore pumping y down should also be accepted, however, xz = b, this is not an accepted string because 0 / 1 is not a positive integer. Therefore this language is not regular.

4. x = none, y = a2^n, z = none

We should be able to pump y as much as we want, and the string should still be accepted.

Assume n = 1 then xyz = aa, this is an accepted string. Therefore xy3z should also be accepted, however, xy3z = aaaaaa, this is not an accepted string. Therefore this language is not regular.